8th International Symposium on Modern Concepts in Endocarditis and Cardiovascular Infections

Final Program and Abstract Book

May 22-24, 2005

Charleston, South Carolina

Map of Charleston, South Carolina…

For more information about these attractions refer to the corresponding page numbers found in the Official Charleston Area Visitors Guide.

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Organized by…

The International Society of Cardiovascular Infectious Diseases (ISCVID)

and

The International Collaboration on Endocarditis (ICE)

at

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DUKE UNIVERSITY MEDICAL CENTER

&

Duke Clinical Research Institute


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Welcome Address…

Dear Colleagues:

On behalf of the International Society of Cardiovascular Infectious Diseases (ISCVID) we would like to take this opportunity to welcome you to the 8th International Society of Cardiovascular Infectious Diseases Meeting being held in Charleston, South Carolina on May 22-24th, 2005.

ISCVID was formed in the late 1980s to bring scientific awareness to endocarditis, a disease of high morbidity and mortality but with very little organized multinational collaboration. In the early 1990s this society began holding biennial scientific sessions to bring together the community of endocarditis investigators. 2005 will mark the 8th International meeting of this group.

This symposium will further the study of endocarditis, cardiovascular infections, and complex bacteremia. It is an excellent opportunity for specialists from infectious diseases, cardiologists, microbiologists, pathologists and cardiovascular surgeons to collaborate on basic and clinical research. It is expected to include a unique interface of scientific investigators, industry representatives actively involved in developing products in this area, and sponsoring societies involved in research and guideline development.

Charleston, South Carolina is one of the South's most beautiful cities. It is rich in history, tradition, and Southern culture. Many of the social events and tours have been designed for all participants and their accompanying guests. We hope that you will enjoy and experience the sights and history of this remarkable city.

As we follow the success of the ISCVID meeting held in Chamonix, we hope the 8th ISCVID Symposium will present a continued international collaboration of knowledge.

Welcome to Charleston!

The 8th ISCVID Planning Committee

Committees...

Executive Board of the ISCVID

A.W. Karchmer (USA) *President*
E. Rubinstein (Canada) *Clerk/Treasurer*
P. Moreillon (Switzerland)
C. Carbon (France)
R.G. Corey (USA)
D. Durack (USA)
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B. Hoen (France)
J.M. Miro (Spain)
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Planning Committee

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G. Ralph Corey, MD
Professor of Medicine
Duke University School of Medicine

Elias Abrutyn, MD
Professor of Medicine
Drexel College of Medicine

Planning Committee Members

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Professor of Medicine
UCLA School of Medicine

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Duke University School of Medicine

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Christopher Woods, MD MPH
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Medical University of South Carolina

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Donald Levine, MD - Detroit, MI
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Meeting at a Glance...

Saturday, May 21st, 2005

1400-1900 **Registration – Mills House**

Sunday, May 22nd, 2005

1000-1230 **Registration – Hibernian Hall**

1230-1300 **Opening Comments**
G.R. Corey MD, E. Abrutyn MD, A.W. Karchmer MD

1300-1330 **The Power of International Collaboration: The Future of ISCVID**
C. Cabell MD MHS

1330-1500 **Session I**
Advances in the Pathophysiology of Bacteremia and Cardiovascular Infections
Session Chairs: A. Bayer MD, P. Moreillon MD PhD

1500-1530 **Break and Poster Viewing**

1530-1730 **Session II**
Biofilms and Cardiac Device Infections
Session Chairs: C. Cabell MD MHS, K. Taubert PhD

1830-2000 **Welcome Reception - The Mills House Hotel**

2000 - **Dinner on Own – Enjoy the Charleston Evening**

Monday, May 23rd, 2005

0715-0800 **Continental Breakfast** – Hibernian Hall

800-1000 **Session III**
Staphylococcal Bacteremia and Endocarditis: Old pathogen, New Problems
Session Chairs: V. Fowler MD MHS, J. Miro MD PhD

1000-1030 **Break and Poster Viewing**

1030-1230 **Session IV**
Non-Staphylococcal Bacteremia and Endocarditis
Session Chairs: B. Hoen MD, C. Woods MD MPH

1230-1400 **Lunch on own – free time**

1400-1600 **Session V**
Curing Complex Cardiovascular Infections:Therapeutic Drug Development at a Crossroads

A Roundtable Discussion with Academia, Industry, and the FDA.

Moderator: R. Califf MD
Academia: G.R. Corey MD, V. Fowler MD MHS, B. Hoen, MD, E. Rubinstein MD

Industry: B. Eisenstein MD, T. Henkel MD, M. Kitt MD, M. Kunkel MD

FDA: M. Goldberger MD, J. Soreth MD

1600-1630 **Break and Poster Viewing**

1630-1730 **Session VI**
Interesting Cases: Audience Participation
Session Chairs: S. Bradley MD, L. Baddour MD, J. van der Meer MD

1900 - 2200 **Conference Dinner – River Boat Cruise**
Buses depart Mills House Hotel starting at 1800.

Tuesday, May 24th, 2005

0715-0800 **Continental Breakfast** – Hibernian Hall

800-1000 **Session VII**
Controversies in Bacteremia and Cardiovascular Infections
Session Chairs: A. Wang MD, E. Abrutyn MD

1000-1015 **Break**

1015-1200 **Session VIII**
Bacteremia and Endocarditis:Advances in Therapy and Therapeutic Trials
Session Chairs: A.W. Karchmer MD, E. Rubinstein MD

1200 **Closing Remarks**

Scientific Program...

Saturday, May 21st, 2005

1400-1900 **Registration – Mills House**

Sunday, May 22nd, 2005

1000-1230 **Registration – Hibernian Hall**

1230-1300 **Opening Comments**
G.R. Corey MD, E. Abrutyn MD, A.W. Karchmer MD

1300-1330 **The Power of International Collaboration: The Future of ISCVID**
C. Cabell MD MHS

1330-1500 **Session I**
Advances in the Pathophysiology of Bacteremia and Cardiovascular Infections
Session Chairs: A. Bayer MD, P. Moreillon MD PhD

1330-1415 *Aspirin as an antivirulence agent in S. aureus IE*
A. Bayer MD

1415-1445 *Advances in the laboratory diagnosis of bacteremia*
D. Murdoch MD

1445-1500 Abstract Presentation: *Evaluation of an ELISA panel for the diagnosis of IE*
S. Lang MD

1500-1530 **Break and Poster Viewing**

1530-1730 **Session II**
Biofilms and Cardiac Device Infections
Session Chairs: C. Cabell MD MHS, K. Taubert PhD

1530-1615 *The role of biofilms in device related and other chronic bacterial infections*
W. Costerton PhD

1615-1645 *The impact of staphylococcal bacteremia on patients with cardiovascular devices*
V. Chu MD

1645-1715 *Approaching pre-operative risk stratification in IE*
C. Mestres MD PhD

1715-1730 Abstract Presentation:
Infections associated with cardiac device infections: What is the best management?
A. de Alarcon MD

1830-2000 **Welcome Reception - The Mills House Hotel**

2000 - **Dinner on Own – Enjoy the Charleston Evening**

Monday, May 23rd, 2005

0715-0800 **Continental Breakfast** – Hibernian Hall

0800-1000 **Session III**
Staphylococcal Bacteremia and Endocarditis: Old pathogen, New Problems
Session Chairs: V. Fowler MD MHS, J. Miro MD PhD

0800-0845 *Community acquired MRSA*
F. Tenover PhD

0845-0915 *S. aureus IE: A consequence of medical progress*
V. Fowler MD MHS

0915-0945 *Current challenges in the treatment of S. aureus IE*
J. Miro MD PhD

0945-1000 Abstract Presentation:
Vancomycin pharmacodynamics against hetero-resistant S. aureus in an in vitro model with simulated endocardial vegetations
K. Leuther PharmD

1000-1030 **Break and Poster Viewing**

1030-1230 **Session IV**
Non-Staphylococcal Bacteremia and Endocarditis
Session Chairs: B. Hoen MD, C. Woods MD MPH

1030-1100 *Enterococcal IE: Different therapeutic options*
L. Olaison MD PhD

1100-1130 *Viridans group streptococci: New classification, different pathogenicity and susceptibility profiles*
C. Woods MD MPH

1130-1200 *Update on the epidemiology and pathophysiology of Group D streptococcal IE*
B. Hoen MD

1200-1230 *New antifungal drugs in the treatment of fungal IE*
W. Steinbach MD

1230-1400 **Lunch on own – free time**

1400-1600 **Session V**
Curing Complex Cardiovascular Infections:Therapeutic Drug Development at a Crossroads

A Roundtable Discussion with Academia, Industry, and the FDA

Moderator: R. Califf MD

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0800-1000 **Session VII**
Controversies in Bacteremia and Cardiovascular Infections
Session Chairs: A. Wang MD, E. Abrutyn MD

0800-0830 *Static antibiotic therapy is a reasonable approach*
Protagonist: L. Baddour MD
Antagonist: D. Levine MD

0830-0900 *Removal of hardware is mandatory in device infections*
Protagonist: R. Utili MD PhD
Antagonist: C. Naber MD

0900-0930 *IE prophylaxis is worthwhile*
Protagonist: P. Lockhart DDS
Antagonist: J. van der Meer MD

0930-1000 *Update on prophylaxis guidelines*
W. Wilson MD
K. Taubert PhD

1000-1015 **Break**

1015-1200 **Session VIII**
Bacteremia and Endocarditis:Advances in Therapy and Therapeutic Trials
Session Chairs: A.W. Karchmer MD, E. Rubinstein MD

1000-1030 *Overview of complex bacteremia and clinical trials*
V. Fowler MD

1030-1100 *Can immunization with StaphVAX protect against staphylococcal infections in patients with implanted medical devices?*
A. Fattom PhD

1100-1130 *Aurexis, a humanized monoclonal antibody targeting S. aureus*
J. Patti PhD

1130-1200 *Lysostaphin as an antistaphylococcal agent*
J. Mond MD PhD

1200 **Closing Remarks**

General Information…

Date and Meeting Place:

May 22-24, 2005

Opening Comments for the 8th biennial ISCVID Symposium will start at 12:30 pm on May 22, 2005 at the Hibernian Hall in Charleston, South Carolina.

Venue

Historic Hibernian Hall
105 Meeting Street
Charleston, South Carolina 29401
Phone 843-722-1463

Location and Climate:

Charleston, South Carolina is one of the South's most beautiful cities. It is rich in history, tradition, Southern culture. This historic city's streets are lined with tall, narrow houses with ironclad balconies. Charleston's tropical climate, lush landscape, and palm trees evoke feelings of visiting the Caribbean Islands.

The average temperature in Charleston in late May is around 80° F (29° C).

Transportation from Charleston Airport

Taxi and shuttle service are available from the Charleston International Airport to the historic district for about $20.

Registration Fees

On-site registration will be offered beginning on Sunday, May 22 at the 1000 hour and the cost is $495.00. The registration fee includes all scientific sessions, breaks, Welcome Reception and the Gala Dinner Riverboat Cruise. Spousal registration is $75.00 and includes the Welcome Reception and Gala Dinner. On-site registrants will have to arrange for their own hotel accommodations.

Registration and Information Desk

The Registration and Information Desk will open during the duration of the ISCVID Symposium. Someone will be available to answer questions about registration, program events, tickets, or general information.

Cancellation Policy

A service charge of 20% will be applied if a cancellation occurs on or before January 1, 2005. If a cancellation occurs between January 1 and May 1, 2005 there will be a 50% service charge. After May 1, 2005, there will be no refunds for any cancellations.

Badge Policies

Name Badges should be worn at all times during the meeting. Please contact the registration desk if a replacement badge is needed.

Shops and Local Attractions

Charleston offers many shopping and recreational opportunities. The City Market is within walking distance of the Hibernian Hall. In addition, there are numerous museums to visit. More information about local attractions is available in the Charleston Visitors Guide in the Registration Packet.

Restaurants

There are many wonderful restaurants located throughout Charleston. A listing of local restaurants is provided in the Charleston Visitors Guide.

Taxis

Taxis can be requested at the concierge desk in the main lobby of the Mills House Hotel.

Internet Access

There will be internet access available for laptop users. Areas will be designated for laptop use at Hibernian Hall.

Language

The official language is English. No translations services will be provided.

Social Program…

Sunday May 22, 2005 – Welcome Reception

The Welcome Reception will be held in the Mills House Hotel. The reception will begin at 1830 hours. The reception will end at 2000 hours, in time for participants to enjoy their own dinner in beautiful Charleston. The dress for this event is casual.

Monday May 23, 2005 – Gala Dinner

The Gala Dinner will be held on "The Spirit of Carolina" cruise ship, a three decked boat that will cruise the Charleston Harbor during dinner. Shuttle service is available from the Queen Street entrance of the Mills House Hotel at 1800 hours. The boat will depart from the dock promptly at 1900 hours and return at 2200 hours. Shuttle service will be provided back to the Mills House Hotel. The dress for this event is casual.

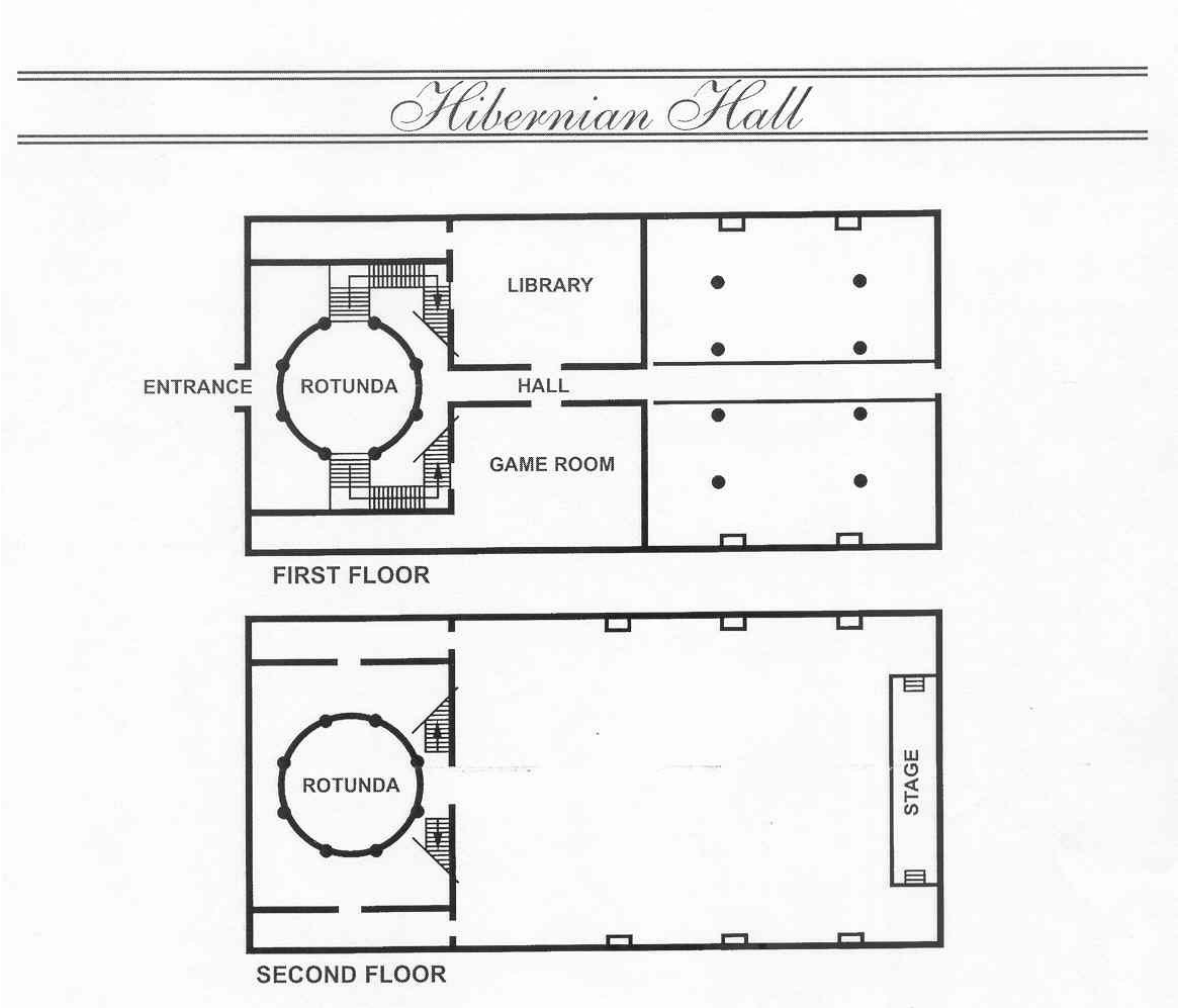
Miscellaneous Social Events

There are several event packages available to ISCVID attendees and their families. These events are opportunities to meet other ISCVID members and enjoy exploring Charleston, South Carolina. Tickets can be purchased at registration desk.

- South Carolina Aquarium $15.00 for Adults / $8.00 for children
- Aquarium + IMAX + Fort Sumter $31.00 Adults / $13.00 children
- Historic Carriage Ride and Tour - $19.00 Adults / $8.00 children
- Walking tour of Charleston $15.00

Hibernian Hall...

Hibernian Hall
Photograph by Lissa D'Aquisto,
courtesy of City of Charleston



Useful Addresses ...

ISCVID: President

A.W. Karchmer, MD
Chief, Division of Infectious Diseases
Beth Israel Deaconess Medical Center
Professor of Medicine- Harvard Medical School
Boston, MA (USA)

Phone: (617) 632-0760
Fax: (617) 632-0766
Email: akarchme@bidmc.harvard.edu

Local Organizing Committee Contact Information:

G. Ralph Corey, MD
Phone:(919) 668-7174

Christopher Cabell, MD
Phone: (919) 668-7524

Meeting Planners

Paragon International, Inc / Dave Rock
Phone: (910) 256-9119

International Collaboration on Endocarditis (ICE)

Christopher Cabell, MD
Duke Clinical Research Institute
2400 Pratt Street
Durham, NC 27710

Phone (919) 668-7524
Email chris.cabell@duke.edu

Poster Presentations...

Poster Presentations will be displayed throughout the symposium at Hibernian Hall. Poster will be located on the 1st floor. Instructions as to poster locations will be provided at the Registration Table.

The numbers on the posterboards correspond to the abstract numbers in the Final Program. Materials for hanging the posters will be provided on site.

Any posters that were mailed to the conference can be picked up at the Registration Table beginning Sunday, May 22nd at 1000 hour

Posters can be hung beginning Sunday, May 22nd at 1000 hour. Please remove all posters by 1200 hour on Tuesday, May 24th.

Poster Presentations...

ISCVID Poster 1

DEFINITE INFECTIVE ENDOCARDITIS (IE) IN PATIENTS WITH OR WITHOUT DIABETES MELLITUS: CHARACTERISTICS AND SHORT-TERM PROGNOSIS

François Alla, Xavier Duval, Thanh Doco-Lecompte, Vincent le Moing, Christine Selton-Suty, Christian Michelet, Bruno Hoen, for the Endocarditis Study Group

University Hospital - Nancy - France

Background
There are conflicting data concerning the prognosis of IE in patients with diabetes mellitus (DM). Moreever, characteristics of IE in DM-patients are poorly described.
Methods
Endocarditis cases were collected for all adults diagnosed during a population-based survey that was conducted in 1999 in France. The diagnosis of DM was established according to the patients'previously known history. DM pts were separated into insulin-DM patients (Group Ii) or oral antidiabetic agents-DM patients (Group Io). Non-DM patients constituted the group II. Demographic factors, comorbidities, clinical characteristics, and in-hospital mortality rates were compared between the 3 groups.
Results
Among the 559 patients with IE, 22 were receiving insulin, 53 oral antidiabetic agents, and 484 were non-DM patients. DM-patients were older (65.7+12.7, 65.9+9.7, 57.9+17.3 ;p=0.004), had more frequently an history of hypertension (77.3%, 43,4%, 25.6% in group Ii, Io and II respectively; p<0.0001), of coronary insufficiency (31.8%, 24.5%, 11.4%; p=0.001), and of prosthetic valve (31.8%, 11.3%, 14.9%; p=0.07). During IE, low Glasgow score (p<0.0001), extra cerebral embolism (22.7%, 25.5%, 13.2%; p=0.04), pacemaker-IE (9.1%, 15.1%, 3.9%; p=0.002) were more frequent in DM-patients. Oral streptococci (0%, 7.5%, 17.9%; p=0.02) were less frequently the causative organism in contrary to aureus (40.9%, 18.9%, 20.9%; p=0.07) and coagulase negative (22.7%, 7.5%, 7.6%; p=0.04) Staphylococci. During the acute phase, cardiac surgery was less frequent (31.8%, 42.2%, 47.9%; p=0.02) while in-hospital mortality was higher (50%, 18.9%, 15.3%; p=0.0001).
Conclusion
According to characteristics, oral antidiabetic agents-DM patients share characters of non-DM patients or insulin-DM patients with IE.

ISCVID Poster 2

CLINICAL, MICROBIOLOGICAL AND OUTCOME CHARACTERISTICS OF INFECTIVE ENDOCARDITIS IN WOMEN

François Alla, Xavier Duval, François Delahaye, Thanh Doco-Lecompte, Christine Selton-Suty, Serge Briançon, Benoit Garin, Bruno Hoen, for the Endocarditis Study Group

University Hospital - Nancy - France

Background
Even if as many as one fourth of infective endocarditis (IE) occur among women, this population remains poorly studied. The French one-year survey (Hoen et al., JAMA 2002), with its large and representative population of well characterized IE, provides an opportunity to compare characteristics of IE between genders.

Methods
Cases were collected for all adults diagnosed during a population-based survey that was conducted in 1999 in France. Among the 559 patients included with a Duke definite IE, 154 (27.5%) were women.

Results
Women were older than men (median [Q1-Q3], respectively 66 yrs [48-76] and 62 [48-70])*. Proportion of previously known heart diseases was similar across the genders (54%). Women were more likely to have a tricuspid IE (18% vs. 11%)*, and less likely to have an aortic IE (40% vs. 55%)*. Women were more likely to have an IE due to staphylococci (36% vs. 27%)*, and less likely to have an IE due to group D streptococci (16% vs. 28%)*. Oral streptococci proportions were similar (14% in women, 17% in men).
In-hospital lethality rates were not significantly different (21% in women, 16% in men). Surgery during acute phase was performed in 38% of the women and 51% of the men*. In a multivariate logistic regression, gender was not anymore significantly associated with a low surgical rate. (*age-adjusted p<0.05)

Conclusion
There are differences in IE characteristics between genders, which could explain the lower surgical rate among women.

ISCVID Poster 3

PROGNOSTIC FACTORS OF MORTALITY AND LONG-TERM FOLLOW-UP OF PERIANNULAR COMPLICATIONS IN INFECTIVE ENDOCARDITIS. A MULTICENTER COHORT STUDY OF 351 PATIENTS WITH AORTO-CAVITARY FISTULAE AND NON-RUPTURED PERIANNULAR ABSCESS (1992-2003).

Ignasi Anguera1, MD; Jose M. Miro2, MD, PhD; Artur Evangelista3, MD; Christopher H Cabell4, MD MHS; Jose Alberto San Roman5, MD, PhD; Isidre Vilacosta6, MD, PhD; Benito Almirante3, MD, PhD; Tomas Ripoll7, MD; M. Carmen Fariñas8, MD; Manuel Anguita9, MD; Enrique Navas10, MD; Carlos Gonzalez-Juanatey11, MD; Ignacio Garcia-Bolao12, MD, PhD; Patricia Muñoz13, MD, PhD; Aristides de Alarcon14, MD, PhD; Cristina Sarria15, MD, PhD; Gabriel Rufi16, MD; Francisco Miralles17, MD; Carles Pare2, MD; Vance G. Fowler4 Jr, MD, MHS; Carlos A. Mestres2, MD, PhD; Elisa de Lazzari2, BSC; Joan R. Guma1 MD, G. Ralph Corey4 and the Aorto-cavitary Fistula in Endocarditis Working Group*, MD, PhD;

From the Corporacio Sanitaria Parc Tauli-Hospital de Sabadell1, H. Clinic - IDIBAPS2 (Institut d'Investigacions Biomediques August Pi i Sunyer, University of Barcelona, Barcelona); Hospital Vall d'Hebron de Barcelona3, Hospital Universitario de Valladolid5, Hospital Clinico San Carlos de Madrid6, Hospital Son Llatzer de Mallorca7, Hospital Marques de Valdecilla Facultad de Medicina de Santander8, Hospital Reina Sofia de Cordoba9, Hospital Ramon y Cajal de Madrid10, Hospital Xeral de Lugo11, Clínica Universitaria de Navarra de Pamplona12, Hospital Gregorio Marañon de Madrid13, Hospital Universitario Virgen del Rocio de Sevilla14, Hospital de la Princesa de Madrid15, Hospital de Bellvitge de Barcelona16, Hospital Carlos Haya de Malaga17, Spain; and Duke University Medical Center in Durham4, USA.

Background
Extension of infection from valvular structures to the periannular tissue in patients with infective endocarditis (IE) is incompletely understood. Among periannular complications, it is unknown whether the prognosis of patients with ACF is worse than those with NRA. The aims of this study were: to determine the distinct clinical features, echocardiographic findings and management of IE patients with aorto-cavitary fistulae (ACF) and non-ruptured abscess (NRA); and to evaluate the impact of ACF on the outcome of patients with endocarditis complicated with periannular lesions.

Methods
In a retrospective multicenter study over 4525 episodes of IE, 351 patients (7.8%, CI 95% 7%-9%) with periannular complications in aortic valve IE were identified (75 ACF, 276 NRA) by echocardiography (325 patients) or during surgery (26 patients).

Results
Rates of heart failure (61% vs 45%, p = 0.01), ventricular septal defect (20% vs 3%, p<0.001) and third degree atrioventricular block (15% vs 6%, p = 0.01) were more frequent in patients with ACF compared to patients with NRA. Surgical treatment was undertaken in 297 patients (85%, CI 95% 80%-88%) with a median time from diagnosis of complication to surgery of 4 days (IQR 1-9 days). In-hospital mortality was 33% (CI 95% 28%-38%). Multivariate analysis identified severe heart failure (OR 2.7, CI 95% 1.6-4.5), prosthetic valve IE (OR 1.9, CI 95% 1.1-3.2), renal failure (OR 2.7, CI 95% 1.6-4.4), age >60 years (OR 2.0, CI 95% 1.2-3.3) and non-elective surgery (OR 2.6, CI 95% 1.4-4.8) as variables significantly associated with an increased risk of in-hospital death. The association between the presence of ACF and in-hospital mortality did not achieve statistical significance (OR 1.5, CI 95% 0.9-2.5, p=0.1). The actuarial 5-year survival rate from diagnosis of periannular complication was 49% in patients with fistulous tracts, and 54% for patients with non-ruptured abscesses (p = 0.36).

Conclusion
Among IE patients, ACF formation is associated with higher rates of heart failure, ventricular septal defect and atrioventricular block than NRA. Despite these higher complications, ACF in the current era of high rates of surgical therapy is not an independent risk factor for mortality.

ISCVID Poster 4

THE CLINICAL CHARACTERISTICS AND OUTCOME OF AORTIC ENDOCARDITIS WITH PERIANNULAR ABSCESSES: A REPORT OF 67 EPISODES DIAGNOSED WITH TRANSESOPHAGEAL ECHOCARDIOGRAPHY FROM THE INTERNATIONAL COLLABORATION ON ENDOCARDITIS MERGED DATABASE

Ignasi Anguera1 MD; Jose M. Miro2 MD, PhD; Christopher H. Cabell3 MD, MHS; Elias Abrutyn4 MD; Vance G. Fowler3 Jr. MD, MHS; Bruno Hoen5 MD; Lars Olaison6 MD, PhD; Paul A. Pappas3 MS; Elisa de Lazzari2 BSC, Susannah Eykyn7 MD, FRCP FRCS FRCPath; Gilbert Habib8 MD; Carles Pare2 MD; Andrew Wang3 MD; Ralph Corey3 MD and the ICE-MD Investigators9.

1Corporació Sanitària Parc Taulí - Hospital de Sabadell, Barcelona, Spain; 2Hospital Clinic-IDIBAPS, University of Barcelona, Barcelona, Spain; 3Duke University Medical Center and Duke Research Institute, Durham, NC, USA; 4Drexel University College of Medicine, Philadelphia, USA; 5Hôpital Saint-Jacques, Besançon, France; 6Sahlgrenska University Hospital, Göteborg, Sweden; 7St. Thomas' Hospital, London, U; 8Unite des Rickettsies, Marseille, France; and the 9International Collaboration on Endocarditis Merged Data-base (ICE-MD) Study Group (investigators are listed in the appendix).*

Background
Extension of infection from valvular structures to surrounding tissue results in periannular abscess formation, increasing the risk for adverse outcomes. Prognostic factors of adverse outcomes in aortic IE with abscess formation have not been adequately addressed. The aims of this study were to determine the clinical characteristics and outcome of patients with definite IE complicated by aortic ring abscess formation detected with transesophageal echocardiography (TEE); and to determine the prognostic significance of abscess formation in aortic valve IE.

Methods
Patients with complicated IE with abscess formation were selected from the International Collaboration on Endocarditis Merged data-base (ICE-MD) if they had aortic valve infection and TEE was performed. The ICE-MD was designed to analyze specific sub-groups based upon a large sample of well-characterized IE patients.

Results
Among the 311 patients with definite aortic valve IE from the ICE-MD who had undergone TEE, 67 patients (21.5%) had periannular abscesses. Patients with abscess formation were more likely to have infection in the setting of a prosthetic valve (40% vs 19%, p<0.001) and to have coagulase negative staphylococcal IE (18% vs 6%, p<0.003) compared to patients without an abscess (12% vs 25%, p<0.03). Systemic embolization, central nervous system events and heart failure were not different between both groups. Patients with abscess were more likely to undergo surgery (84% vs 36%, p<0.001) and in-hospital mortality has higher in patients with abscess formation (19% vs 11%, p=0.09) than patients without abscess. Multivariate analysis of prognostic factors of mortality in aortic IE identified age (OR 1.6; 95% CI 1.2-2.1), Staphylococcus aureus infection (OR 2.4; 95% CI 1.1-5.2) and heart failure (OR 2.9; 95% CI 1.4-6.1) as variables independently associated with increased risk of death. There was a trend toward higher mortality for patients with periannular abscess (OR 1.9; 95% CI 0.9-3.8). Multivariate analysis of prognostic factors of mortality in complicated aortic IE with abscess formation identified S. aureus infection (OR 6.9; 95% CI 1.6-29.4) as independently associated with increased risk of death.

Conclusion
Periannular abscess formation in aortic valve IE is not an independent risk factor for mortality in the current era of TEE studies and high use of surgical treatment. S. aureus infection constitutes an independent prognostic factor for mortality in patients who develop abscess formation.

ISCVID Poster 5

RENAL FAILURE WITH INFECTIVE ENDOCARDITIS

T. Donova, M. Matveev

University Hospital "Akexandrovska"; Department of Internal Medicine; Clinic of Cardiology

Background
Patients with infective endocarditis (IE) are described to suffer renal impairment, characterized clinically and morphologically as renal infarct, glomerulonephritis and acute interstitial nephritis due to septic embols, immunocomplex-mediated mechanisms, toxic effect of the antibacterial drugs.

Methods
We examined 121 patients who had underwent surgical operation for native IE - 32 (26%), 3 women and 29 men (average age 48) of them had pathological urine findings: proteineuria, leucocyteuria, erythrocyteuria and hyaline cylinders. These patients were compared to another group without high urea and creatinine (U&C), regarding microbiology, duration of the clinical symptoms and antibacterial therapy.

Results
Serum creatinine of 65% of the patients was within 138-200 µmol/L and for the rest it was 200-328 µmol/L. Ethiological agent was found for 19 patients with high U&C and for 34 patients with normal U&C. Patients with high U&C had a predominant microbiological agent staphylococcus (52.6%), and for those with normal U&C - streptococcus (41%). Duration of the clinical symptoms until IE diagnosed and duration of the antibacterial treatment shows no statistically signifficant difference for both groups. There was a case of staphylococcal IE, comlicated by rapidly progressing renal failure in the beginning of the antibacterial treatment that imposed haemodialysis. What followed was complete recovery of renal function and the patient underwent a successful surgical operation - aortic valve replacement.

Conclusion
Renal failure is possible, although ususally transitory complication of IE. Early diagnosis and precise treatment is important for complete recovery of renal function and favourable prognosis.

ISCVID Poster 6

INTERNAL CARDIAC FISTULA - RARE COMPLICATION OF INFECTIVE VALVULAR ENDOCARDITIS

T. Donova

Univetsity Hospital "Alexandrovska"; Department of Internal Medicine; Clinic of Cardiology

Background
Cardiac fistula is rare complication mostly of infective endocarditis (IE). Its occurance is less than 1% among patients with native as well as prosthetic IE. Expansion of the infection out of the valvular structures leads to complications: perianular abscess, erosion of the valvular ring, fungal aneurysm of an aortic sinus. Rupture of such an abscess and/or anurysm creates pathological fistula in the cardiac chambers and aggravates the haemodynamics.

Methods
A group of 121 patients who had surgical operation for IE were examined by echocardiography (transthoracic, transesophageal, Doppler - conventional and color)

Results
Six patients (0.5%), men (average age 44 years) had rupture of the sinus of Valsalva (SV), resulting into cardiac fistula. Pathological communication occurred mostly in the right chambers - 3 in the right ventricle (RV), 1 in the right atrium. Three of them were a result of rupture of the right SV, 2 of them - consequence of rupture of the non-coronary SV of the left ventricle. Four of the patients had native IE and one - late prosthetic IE. The Doppler-echocardiography carried out, showed before operation pathological shunt jet in RV with 4 of the patients. Five of the patients with cardiac fistul were implanted aortic prosthetic valve and one of them underwent aortic prosthetic valve re-implantation and plastic surgery of SV: none of them had complications in the early postoperative period.

Conclusion
Although rare, internal cardiac fistula is a serious complication of IE. Echocardiographic examination, particularly transesophageal and Doppler echocardiography are important for early diagnosis before surgical intervention.

ISCVID Poster 7

RISK FACTORS FOR CENTRAL NERVOUS COMPLICATIONS (STROKE AND TIA) IN PATIENTS WITH INFECTIVE ENDOCARDITIS (IE)

Barsic B, Olaison L, Suter F, Rizzi M, Pappas P, Rubinstein E, Bradley S, Dickerman S, Kamarulzaman A, Abrutyn E, Fowler V, Mirò JM, Sexton D, Cabell C

Hospital for Infectious Diseases Zagreb

Background
CNS complications occur in 20 – 40 % of patients with IE but their characteristics and risk factors are seldom evaluated in prospective, multicenter studies.The aim of the study was to identify risk factors for CNS complications of IE and whether ASA and coumadin/warfarin modify the incidence of CNS complications.

Methods
International Collaboration on Endocarditis–Prospective Cohort Study (ICE-PCS) included 1779 cases of definite IE in 39 tertiary care referral centers with an interest in IE from 16 countries. Each center utilized a standard case report form. Patients with CNS complications were selected from the database only if stroke and/or TIA occurred during the episode of IE.

Results
Stroke and/or TIA occurred in 343 (19.3%) patients with IE. Stroke occurred in 294 (85.7%) (ischemic 197, hemorrhagic 56, not specified 41) and TIA in 52 (15.2%) patients.
Mitral valve involvement with the presence of vegetations and embolization of vascular periphery significantly increased the risk of CNS complication compared to patients without CNS complications (62.1% vs. 49.6%; OR=2.33, 95% CI 1.82-2.98,p<0.0001 and 38.3% vs. 24.6%; OR=3.1, 95% CI 2.03 – 4.73, p<0.0001, respectively). Use of aspirin and/or coumadin started before the episode of IE did not increase the risk of CNS complications (OR 1.06, 95% CI 0.76 – 1.46 and 1.24, 95% CI 0.91 – 1.68; p>0.05 respectively). In hospital mortality was significantly higher in patients with CNS complication than in other patients (29.1% vs. 14.1%, p<0.0001).

Conclusion
Mitral valve endocarditis with vegeations significantly increases the risk of CNS complications. We did not find that aspirin and/or warfarin increase the risk for CNS complications. CNS complications are associated with worse outcome of patients with IE.

ISCVID Poster 8

HOW IS INFECTIVE ENDOCARDITIS (IE) DIAGNOSED IN OLDER ADULTS? AN INTERNATIONAL COLLABORATION ON ENDOCARDITIS PROSPECTIVE COHORT STUDY (ICE-PCS).

Suzanne F. Bradley, Riccardo Utili, Emilio Bouza, Asuncion Moreno, David Murdoch, Vance Fowler, Eli Abrutyn, Jose M. Miro, Daniel Sexton, Christopher Cabell, for the ICE Investigators.

U Michigan Med School and VAMC Ann Arbor

Background
Atypical features of IE in the elderly may make diagnosis difficult. The aim of this study is to assess the diagnostic features of IE in young and older adults with IE using data from the ICE-PCS.

Methods
All data were collected prospectively and analyzed by Wilcoxin and chi-square tests. Of 1779 IE cases, 689 patients aged 65 years and older were compared with younger patients.

Results
Fever at the time of admission was equally common. However, the presence of new murmurs, vascular/embolic phenomena, splenomegaly, and mycotic aneurysms were noted less often in older patients (P<0.0001). Positive blood cultures were similar in both groups (93% vs 89%), p=0.017; the proportion of patients receiving antibiotics prior to diagnosis was also similar in the two groups. When performed, transthoracic echocardiography was less often positive (55% vs 68%). Overall, a new regurgitant murmur was found less frequently in older adults (59% vs 65%, p=0.013). Vegetations were less commonly seen with increased aging except on intracavitary devices. Abscesses and prosthetic paravalvular complications were more common in elderly persons, but they were less likely to have cardiac surgery (37% vs 54%; p<0.0001) and mortality was increased (26% vs 12%, p<0.0001).

Conclusion
Fever on admission is as common in the elderly as in young patients and typical clinical findings may be absent. Diagnostic transthoracic echocardiograms are found less often in older adults, and abscesses and paravalvular complications may be more common. If IE is suspected in this age group, greater reliance on transesophageal echocardiography may be necessary.

ISCVID Poster 9

SEVERE BLEEDING INDUCED BY BETA-LACTAM ANTIBIOTICS

Mellerup M, Nielsen JD, Bruun NE

Gentofte University Hospital

Background
Casuistic report on high-dose beta-lactam antibiotics as cause of clinically severe bleeding.

Methods
Retrospective and prospective data on patients with severe bleeding and platelet dysfunction during treatment with penicillin in high doses were obtained from case records, and the central database for clinical biochemistry.

Results
During a period of six months we observed four patients with impaired platelet function during treatment with high doses of beta-lactam antibiotics, in three patients severe bleeding ensued. All patients were treated for endocarditis with penicillin (20 MIU/day). Simplate bleeding time was prolonged in all patients (> 30 min) and ADP-induced platelet aggregation was markedly reduced. Clinical bleeding stopped, and Simplate bleeding time and ADP-induced platelet aggregation were normalised in all patients after discontinuation of beta-lactam antibiotics. The lowest platelet counts in the three patients ranged 76-200 x 109/L. All patients had at some point received antithrombotic agents (aspirin, tinzaparin and warfarin). These were however discontinued during the period of severe bleeding, and coagulation analyses did not reveal significant coagulopathy. One patient had chronic renal failure.

Conclusion
Bleeding induced by Beta-lactam antibiotics was first reported in 1970. Subsequent in vitro and in vivo studies led to the conclusion that beta-lactam-antibiotic-induced bleeding is caused by a non-specific inhibition of signal transduction in the platelet membrane. We suggest that if bleeding episodes occur, or if platelet number is decreasing in patients treated with high doses of beta-lactam antibiotics for prolonged time as in IE, beta-lactam-antibiotic-induced platelet dysfunction should be suspected. Since a large number of patients with infective endocarditis will need complicated surgery, physicians should be aware of this problem and changing of the antibiotic strategy should be considered.

ISCVID Poster 10

INFECTIOUS ENDOCARDITIS PATIENTS TREATED WITH GENTAMICIN LOSE 25% OF THE GLOMERULAR FILTRATION RATE.

Buchholtz K, Larsen CT, Lund JO, Hassager C,Bruun NE

Dept. Cardiology, Gentofte University Hospital, Denmark

Background
Patients with infectious endocarditis(IE) are often treated with gentamicin for a prolonged time. Aminoglycosides are known to be nephrotoxic. The effect of gentamicin on the glomerular filtration rate(GFR) has never been investigated, as measured by an isotope technique, during the course of treatment for IE.

Methods
19 consecutively hospitalized patients, median age 63 years (36 - 90), 10 men and 9 women were treated for infective endocarditis, diagnosed according to the Duke criteria. Blood cultures were positive in 17 patients. Surgery was performed in 11 patients due to significant valve destruction. All patients were treated with standard anti-microbial regiments, and all patients received Gentamicin for a median of 22 days (7-42 days). The dosage of Gentamicin was adjusted after the creatinine level, and monitored by daily trough serum gentamicin levels (<1 mg/l).
GFR was measured as the 51Cr-EDTA clearance at the start and at the end of antibiotic treatment. In addition kidney function was followed by serum creatinine.

Results

	Admission	Discharge	Change (%)	Statistics
Serum Creatinine (micromol/l)	83 (52-177)	94 (59-225)	14	p = 0.0132
51Cr-EDTA clearance (ml/min)	75 (41-111)	51 (26-87)	24	p < 0.001

GFR decreased significantly both in patients receiving operation and in patients who where not operated. There was no difference in the change of GFR between the two groups.

Conclusion
1. We have found that although serum creatinine level is increased during the course of gentamicin treatment it gravely underestimates the actual fall in GFR.
2. The increase in serum creatinine often stays within the normal range which also contributes to this underestimation.
3. Our findings raise the question weather aminoglycosides should be still used as a first line drug in the treatment of IE.

ISCVID Poster 11

PROSTHETIC VALVE ENDOCARDITIS AND CARDIAC DEVICE INFECTIONS: REPORT OF 496 CASES FROM THE ICE PROSPECTIVE COHORT STUDY

Cabell C, Iarussi D, Athan E, Selton-Suty C, Chu V, Pappas P, Peterson G, Utili R, Anguera I, Wang A, Francis J, Habib G, Naber C, Braun S, Suter F, Rizzi M, de Alarcón A, Jimenez-Exposito M, Logar M, Pare C, Thuny F, Corey GR, Hoen B, Sexton D, Olaison L, Fowler V

Background
Prosthetic valve endocarditis (PVE) and cardiac device infections (CDI) are emerging but incompletely understood complications of medical progress. The purpose of this study was to determine the current clinical characteristics and outcome of patients with PVE and CDI utilizing the International Collaboration on Endocarditis (ICE) Prospective Cohort Study (ICE-PCS).

Methods
From January 1, 2000 and December 31, 2003, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries using a standard case report form.

Results
A total of 496 patients (27.9%) had either PVE (307/1779, 17.2%) or CDI (189/1779, 10.6%). The median age of PVE patients was 63.8 years (IQR 47.9-73.9) compared to 71.1 (IQR 57.2-77.8) (p<0.001). Most underlying conditions were similar between the two groups of patients. The most common organisms for both groups were as follows: Staphylococcus aureus (PVE=21.1%, CDI=35.3%), coagulase negative staphylococci (PVE=18.5%, CDI=25.1%), viridans group streptococci (PVE=14.5%, CDI=6.4%) and enterococcus (PVE=11.9%, CDI=7.0%). Echocardiography detected endocarditis in the majority of patients (PVE=87.7%, CDI=90.2%). Surgery during the acute episode was common (PVE=52.1%, CDI=56.6%). Complications were more common in the PVE group when compared to the CDI patients: stroke (16.0% vs. 9.0%, p=0.03), other embolic events (14.7%, 10.6%, p=0.08), heart failure (32.9% vs. 23.3%), intracardiac abscess (30.9% vs. 11.1%, p<0.01). Mortality was not statistically different between the two groups ((22.5% vs. 18%, p=0.24).

Conclusion
In this large, multicenter, international cohort, S. aureus was the most common cause of PVE and CDI. Complications were more common in patients with PVE there were similar rates of surgical intervention. Overall mortality was high in both groups. Further work is needed to evaluate the emerging importance of S. aureus as a cause of PVE and CDI, to identify risk factors for death, and to define the impact of early surgery on survival.

ISCVID Poster 12

RISK OF COMPLICATIONS IN PATIENTS WITH DEFINITE ENDOCARDITIS: INSIGHTS FROM THE ICE PROSPECTIVE COHORT STUDY

Cabell C, Fowler V, Lerakis S, Levine D, Pappas P, Michelet C, Morris A, Naber C, Tattevin P, Tan R, Miro J, Sexton D, Rubinstein E, Abrutyn E

Background
Infective endocarditis is a serious disease associated with a high rate of complications. In addition, most guidelines emphasize patients at high risk for complications as the key groups in which prophylaxis should be considered. These recommendations, which emphasize the risk of an adverse outcome, are hampered by a paucity of primary data in populations with underlying conditions. The purpose of this study was to characterize the groups of patients with endocarditis at high risk for complications.

Methods
From January 1, 2000 and December 31, 2003, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries using a standard case report form. A serious complication was defined as one of the following: stroke, other embolic event, heart failure, intracardiac abscess formation, persistent positive blood culture, or new conduction abnormality.

Results
Of the 1779 patients in the ICE prospective cohort study (ICE PCS), 794 (44.6%) patients had a least one serious complications: stroke=294 (37.0%), other embolization=379 (47.7%), heart failure=303 (38.2%), abscess=266 (33.5%), persistent positive blood culture=97 (12.2%), and new conduction abnormality=131 (16.5%). Patients with complications were younger (55.2 vs. 57.8, p<0.01), but were more likely to be transferred from other facilities (49.5% vs. 35.5%, p<0.01). Underlying conditions were not significantly different other than a history of injection drug use (11.8% vs. 8.6%, p=0.02). Patients with complications were more likely to be infected with Staphylococcus aureus (34.2% vs. 29.6%), but less likely to be infected with viridans group streptococci (14.0% vs. 21.2%). Although patients with complications were much more likely to undergo surgical therapy (54.2% vs. 41.7%), their overall mortality remained high (24.3% vs. 11.2%).

Conclusion
Endocarditis remains a serious and deadly disease. Although patients with complications have a high rate of surgery, mortality remains high. Notably, patients with complications have similar underlying conditions compared with those patients that do not develop complications. Further further studies are needed to better understand the relationship between the occurrence of complications and 1) delays in diagnosis;2) the type of treatment given; 3) the virulence of the infecting organism or 4) the underlying health of the patient.

ISCVID Poster 13

THE USE OF SURGERY IN PATIENTS WITH DEFINITE ENDOCARDITIS: INSIGHTS FROM THE ICE PROSPECTIVE COHORT STUDY

Cabell C, Mestres C, Peterson G, Olaison L, Pappas P, Anstrom K, Tan R, Spelman D, Watkins C, Eisen D, Casabe J, Pachirat 0, Feneley M, Wang A

Background
In patients with endocarditis, it is paramount to determine if surgery is need to eradicate the infection and prevent serious complications. Unfortunately, there are limited data available to help guide this therapeutic decision.

Methods
From January 1, 2000 and December 31, 2003, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries using a standard case report form.

Results
Median age in the study was 58.2 years; 70.1 percent had native valve infective endocarditis. Most patients (75.6 percent) presented early in the disease with few of the typical hallmark. Recent health care exposure was found in nearly 25 percent of patients. Staphylococcus aureus was the most common pathogen (31.4 percent). The mitral valve (40.1 percent) was more commonly infected than the aortic valve (36.4 percent). Complications were common: stroke (16.5 percent); embolization other than stroke (21.3 percent); heart failure (30.9 percent); and intracardiac abscess (15.0 percent). The use of surgery was common (47.3 percent) yet in-hospital mortality remained high (17.0 percent). Regions with the highest use of early surgery had the lowest in-hospital mortality, specifically in high-risk populations.

Conclusion
In the present day, IE is an acute disease. Throughout much of the world IE is characterized by a high rate of S. aureus infection in patients with a previous health care exposure. Despite a high use of surgery in this cohort, overall mortality remains high. In addition, we have found initial evidence that early use surgery may be critical to improving patient outcomes.

ISCVID Poster 14

ENTEROCOCCAL NATIVE VALVE ENDOCARDITIS (NVE) IN INTERNATIONAL COLLABORATION ON ENDOCARDITIS – PROSPECTIVE COHORT STUDY (ICE-PCS): CHARACTERISTICS OF THE FIRST 139 CASES

JR McDonald1, L Olaison2, R Utili3, B Hoen4, M Almela5, PA Pappas1, CH Cabell1, MF Tripodi3, CW Woods1, NS Chipigina6, E Nadir7, AS Kumar8, M Imazio9, GR Corey1; 1Duke Univ. Med. Ctr., Duke Clin. Res. Inst., Durham, NC, 2Sahlgrenska Univ. Hosp., Gothenburg, Sweden, 3Second Univ., Naples, Italy, 4Hosp. St-Jacques, Besancon, France, 5Hosp. Clinic - IDIBAPS, Univ. of Barcelona, Barcelona, Spain, 6Russian St. Med. Univ., Moscow, Russia, 7Tev Aviv Univ. Sch. Of Med., Tel Aviv, Israel, 8All India Institute of Med. Sciences (AIIMS), New Delhi, India, 9Maria Vittoria Hosp., Turin, Italy.

Background
ICE-PCS is an ongoing prospective study of patients with infective endocarditis (IE), enrolling patients from 39 centers in 16 countries since January 2000.

Methods
All patients with definite enterococcal NVE in the ICE-PCS through December 2003 were included in this cohort.

Results
One hundred eighty-eight of 1779 episodes (11%) of IE were due to enterococcus, 76% (139/182) of which were NVE. Among patients with enterococcal NVE, 80% (110/138) were male, and mean age was 62.4 years. Nineteen percent (26/138) had a genitourinary (GU) cancer or recent GU procedure, and 10% (14/138) had a gastrointestinal (GI) cancer or recent GI procedure. Aortic vegetation was present in 60% (80/134) of episodes, and mitral vegetation in 40% (53/134). Of 131 speciated isolates, 127 (97%) were Enterococcus faecalis and 4 (3%) E. faecium. Twenty-two percent (14/63) of tested isolates were resistant to penicillin, 2% (3/122) to ampicillin, and 3% (3/109) to vancomycin. High-level resistance (HLR) to streptomycin was seen in 30% (24/81) of tested isolates, and HLR to gentamicin in 23% (26/111). Surgery was performed in 43% (59/138) of episodes. Heart failure occurred in 40% (54/135) of episodes, and in-hospital death in 17% (23/138). Thirty-three percent (8/24) of patients with HLR to streptomycin died, compared to 11% (6/56) of those without (p=0.01).

Conclusion
In this international multi-center cohort, enterococcal NVE occurred mostly in older men. It was often associated with GU or GI cancers or procedures. There was higher mortality among patients infected by isolates with high-level resistance to streptomycin.

ISCVID Poster 15

THE EFFECT OF REFERRAL BIAS ON THE TREATMENT AND OUTCOMES OF INFECTIVE ENDOCARDITIS (IE): AN ANALYSIS OF 1779 PATIENTS IN THE ICE PROSPECTIVE COHORT STUDY (ICE-PCS)

Sexton D, Abrutyn E, Miro J, de Benito N, Pappas P, Bouza E, Munoz P, Chipiginia N, Lejko Zupanc T, González Ramallo, Rubinstein E, van der Meer J, Cabell C

Duke University School of Medicine

Background
Prior studies that examined the impact of referral bias on the treatment and outcomes of IE have been either retrospective studies or single-center case series. No data exist of the impact of referral bias using prospective data from multiple centers throughout the world.

Methods
We analyzed 1179 patients in the ICE-PCS and compared the treatment and outcomes of 743 patients who were transferred to one of the ICE study hospitals for the treatment of IE with 1010 patients who received their care at the same treatment facility. Data were analyzed using Wilcoxin or chi-square tests.

Results
Transferred patients were significantly younger (mean age 54.6 v 57.5 p<0.0001), and significantly more likely to have congestive heart failure (38 v 26%); intracardiac abscesses (19 v12%) or new conduction abnormalities (9 v6%) (all p<0.001). Transferred patients were also more likely to have echocardiographic evidence of IE (by TTE 69 v 58%; by TEE 92 v 89% p<0.0001 and <0.05 respectively) and were almost twice as likely to undergo surgery (63 v 36% p <0.0001). Transferred patients were less likely to be HIV-positive, have cancer or to be taking immunosuppressive therapy. Despite these differences, the in-hospital mortality of the two groups was nearly identical (17 v 18%). A larger proportion of transferred patients occurred in North American and Northern European centers; over half of all patients in North American centers were transferred from other hospitals.

Conclusion
Referral status has a large impact on the observed incidence of complications, surgical therapy and the clinical characteristics of patients with IE. The impact of this referral bias is greatest in hospitals in North American and northern Europe. Studies reporting rates of complications should include data on referral status.

ISCVID Poster 16

EFFICACY OF ANTIBIOTIC AND ANTISEPTIC PROPHYLAXIS IN THE PREVENTION OF BACTEREMIA FOLLOWING DENTAL EXTRACTIONS

Tomás I, Älvarez M, Limeres J, Saavedra E, López-Meléndez C, Diz P

*Santiago University. Spain. *Research Laboratory. Xeral-Cíes Hospital. Vigo. Spain*

Background
To date, the literature is unclear about the role of antibiotic and antiseptic prophylaxis in the prevention of bacteremia following dental procedures. The aim of this study was to evaluate the efficacy of oral prophylactic dosage with Amoxicillin (AMX), Clindamycin (CM) and Moxifloxacin (MXF) and a single Chlorhexidine (CHX) mouthwash in the prevention of bacteremia following dental extractions (BDE).

Methods
Two hundred seventy four adults who required dental extractions under general anaesthesia were randomly assigned to: control group, AMX group, CM group and MXF group (receiving 2 g, 600 mg and 400 mg respectively, 1 hour before anaesthesia induction), and CHX group (undergoing a previous 30 seconds mouthwash with 0.2% CHX). Venous blood samples were collected from each patient at baseline, 30 seconds, 15 minutes and 1 hour after tooth extractions. Samples were inoculated in BACTEC plus aerobic and anaerobic blood culture bottles, and were processed in the Bactec 9240. The subculture and further identification of the isolated bacteria were performed by conventional microbiological techniques.

Results
The prevalences of BDE in the control group/AMX group/CM group/MXF group/CHX group were 96/46/85/54/79% at 30 seconds, 64/11/74/21/30% at 15 minutes, and 20/4/24/7/2% at 1 hour later. Streptococci were the most frequently identified bacteria in all groups (45-68%), only the percentage in the AMX group being significantly lower than in the control group (45% versus 64%).

Conclusion
AMX and MXF prophylaxis showed similar efficacy in reducing the prevalence and duration of BDE, and both antibiotics were more effective than CM prophylaxis. The efficacy of CHX mouthwash was similar to antibiotic prophylaxis in the reduction of BDE at 15 minutes (similar to MXF prophylaxis) and 1 hour later (similar to AMX and MXF prophylaxis). In consequence, MXF prophylaxis is a promising antibiotic alternative for prevention of BDE, when beta-lactams are not indicated. Moreover, we suggest the routine use of a 0.2% CHX mouthwash before dental extractions to minimize the risk of BDE.

ISCVID Poster 17

LONG-TERM PROGNOSIS OF LEFT-SIDED NATIVE VALVE INFECTIVE ENDOCARDITIS

V.Kulichenko, N.Chipigina, T.Vinogradova

Russian Medical State University, Moscow, Russia

Background
The current long-term prognosis of NVIE in medically treated patients is still unclear. The results of risk factor assessment are rather different in the small number of performed studies. The study was aimed to follow-up natural history of the left-sided IE in medically treated patients, who did not undergo surgical treatment for different reasons and evaluate risk factors of late complication.

Methods
A follow-up study was performed in 96 patients treated medically for subacute IE. Mean age was 45,0. IE was regarded as primary (i.e. cited on previously healthy valves) in 42% and as secondary (on abnormal, predomitantly rheumatic valves) in 58% cases. The infection cited on the aortic valve in 42%, on the mitral in 38%, on both AV and MV in 20%. Surgically treated patients were excluded. Mean follow-up time was 4,8 years.

Results
30 patients died during the follow-up. One-year mortality was 17%, 2-year - 25%, 5-year - 31%. Causes of death were: heart failure in 25 (84%), ischemic (embolic) stroke in 4 (13%), sudden death in 1 case. The curves of survival in groups with prevalent aortic or mitral damage were rather different. All deaths in the aortic group occured during 2 years from discharge. Mortality in this group was significantly higher (40%). Survival in the mitral group declined gradually and was 78%. Patients with the primary variant of IE showed significantly higher mortality than with secondary one. Main complications in survivors were CHF in 51%, recurrences in 18% and embolic events in 4%; 22% of survivors had not late complications at all. Significant risk factors for poor prognosis (death and severe CHF) were aortic valve involvement, primary variant of IE, severity of regurgitation, left chambers size. Such factors as severity of intoxication or immunologic symptoms, casual agent, embolic events during hospitalization, echocardiographic parametres of vegetations were not significant as late prognostic. For late embolic complications only vegetations mobility was predictive.

Conclusion
Consideration of pointed risk factors may be helpful for treatment strategy planning in hemodinamically stable patients after NVIE healing.

ISCVID Poster 18

COAGULATION DYSFUNCTION AND THROMBOEMBOLIC EVENTS IN INFECTIVE ENDOCARDITIS.

T.Vinogradova, N.Chipigina, K.Ozerecky.

Russian Medical State University, Moscow, Russian Federation

Background
Procoagulant changes and alteration in platelet activity and plasma viscosity may contribute to the increased risk of thromboembolic events in IE. The aim of this study was to investigate systemic coagulation activity, fibrinolytic capacity, platelet activity and plasma viscosity in IE patients with and without embolic events, to analyse the risk factors for systemic emboli and to estimate the role of systemic coagulation disfunction in embolic events in IE patients .

Methods
The study included 128 patients (76 males and 52 females, mean age 50 years, range 33- 67 years) with definite IE according to the Duke criteria. The results of clinical, echocardiographic, hematologic and haemostatic investigations were analyzed. Hemostatic tests, including global tests of coagulation (activated partial thromboplastin time, thrombin time, international normalized ratio), plasma fibrinogen level, antithrombin-III, protein C, soluble fibrin monomers (SFM), XIIa-depending fibrinolysis, ADF-induced platelet aggregation and plasma viscosity were measured in 41 IE patiens and in control group (24 patients with rheumatic heart disease).

Results
The study exhibited that IE patients had significantly increased serum fibrinogen level and plasma viscosity and decreased fibrinolitic activity and platelet aggregation, while global tests of coagulation were not significantly changed. There were no significant differences in results between IE patients with and without embolism except plasma level of SFM that was elevated in IE patients after embolic complications. Nineteen patients (15%) had major embolic complications. No correlation was found between embolism and hemostatic and rheologic disorders. Patients with embolism had a significantly larger vegetation size, mobility of vegetations was also found to be risk factor.

Conclusion
Our data indicate that IE patients have haemostatic and rheologic disorders which do not correlate with embolic complications. Important predicting factors of embolism in IE are the size and mobility of vegetations.

ISCVID Poster 19

THE RESULTS OF OBSERVATION OF PATIENTS WITH INFECTIVE ENDOCARDITIS

Butkevich O. M. D.M.,Vinogradova T.L. D.M., Chipigina N.S., D.M.

Medical University of Russia

Background
During last 40 years (1965 – 2005) we observed 620 patients with I E. Diagnosis of I E was based on Duke-criteria (1994-2000) and our criteria of 1992. There are 0,8% of patients with acute IE, the others had subacute IE. 402 were men, 218 were women, the most prevalent we saw was primary IE. From 1965 to 2005, the age of patients increased, and in last 10 years was 53 ±17. Prevalence of primary IE - 51 - 61% at last 20 years. Secondary IE was diagnosed with background RF, congenital pathology, Hypertrophic cardiomyopathy, prolapse of mitral valve etc. In hemoculture strep viridans and Staph aureus were most prevalent.

Methods
Patients were inspected with Echocardiology and Doppler - echocardiography, definite hemoculture (positive in 67%) by immunological tests and usual common investigation. During last 10 years we inspected thrombo-hemorrhagic status of patients with contemporary methods.

Results
Our Criteria of diagnosis for subacute IE, major: fever≥38, heart murmur, splenomegaly and peripheral vasculitis; + minor: glomerulonephritis and thromboembolic syndrome; + Echocardiography - finding and (+) hemoculture; Most patients had different symptoms in different years of observation and treatment. Then, atypical track of IE we observed in patient with "special forms" of illness: IE drug-addict, nosocomial IE, prosthetic valves, etc. Extracardiac symptoms were seen: glomerulonephritis ≥ 30%, serositis ≥ 25%, vasculits ≥ 40%, myocarditis ≥ 17%. In five-year follow-up of 100 (1995 – 2000) patients with subacute I E, 73 patients survived. The maximum lethal outlet was in the two first years after diagnosis. The main cause of mortality remained heart failure. Thrombohemorrhagic complications were diagnosed in 1/3 of patients. During the period of 1980-2005, 25% of patients had surgical treatment; lethal output did not suppress 7-8%.

Conclusion
We have a suggestion that subacute IE is a unique illness, with classic symtoms in the antibiotic era, while acute IE looks like a form of sepsis.

ISCVID Poster 20

COAGULASE-NEGATIVE STAPHYLOCOCCAL NATIVE VALVE ENDOCARDITIS: 87 EPISODES FROM THE ICE-PCS

V. H. Chu, G. R. Corey, J. M. Miro, B. Hoen, C. H. Cabell, P. A. Pappas, E. Athan, M. E. Stryjewski, F. Marco, D. Levine, T. Elliott, C. Fortes, D. Gordon, P. Tornos, V. G. Fowler, Jr., and the ICE-PCS Study Group

Duke University Medical Center

Background
Native valve endocarditis (NVE) due to coagulase–negative staphylococci (CoNS) is uncommon and incompletely understood. The purpose of this investigation was to compare the features of CoNS NVE to S.aureus and viridans streptococcal (strep) NVE within the International Collaboration on Endocarditis Prospective Cohort Study (ICE-PCS).

Methods
From 1/00 to 12/03, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries.

Results
Of the 1076 cases of definite NVE in the ICE-PCS not associated with injection drug use, 87 (8.1%) were caused by CoNS. Compared to patients with S. aureus NVE, patients with CoNS NVE had similar predisposing features: healthcare acquisition (38% vs. 48%, p=.20), chronic intravascular (IV) catheter (9.2% vs. 14%, p=.24), and history of invasive procedure (24% vs. 27%, p=.67). Patients with CoNS NVE underwent surgery more frequently (63% vs. 37%, p<.01); however, rates of cardiac abscess (17% vs. 14%, p=.49), heart failure (CHF) (39% and 33%, p=.21), and in-hospital mortality (23% vs. 25%, p=.70) were similar. Compared to patients with viridans strep NVE, patients with CoNS NVE were more likely to have healthcare acquisition (38% vs. 3.5%, p<.01), chronic IV catheter (9.2% vs. 0, p=<.01), and history of invasive procedure (24% vs. 3.9%, p<.01). Rates of CHF (39% vs. 25%, p<.01), cardiac abscess (17% vs. 8.2%, p=.02), and in-hospital mortality (23% vs. 7.4%, p<.01) were higher in patients with CoNS NVE than patients with viridans strep NVE.

Conclusion
The mortality in CoNS NVE is comparable to the mortality in S. aureus NVE. Further investigation is needed to understand the role of healthcare acquisition and other factors related to this disease.

ISCVID Poster 21

PROSTHETIC VALVE ENDOCARDITIS DUE TO COAGULASE-NEGATIVE STAPHYLOCOCCI: 64 EPISODES FROM THE ICE-PCS

V. H. Chu, G. R. Corey, P. Jones, I. Anguera, P. A. Pappas, C. H. Cabell, J.M. Miro, S. Braun, E. Bouza, P. Commerford, J. Francis, M. Oyonarte, P. Selton-Suty, B. Hoen, G. Habib, B. Almirante, P. Tornos, D. J. Sexton, V. G. Fowler, Jr., and the ICE-PCS Study Group

Background
Coagulase–negative staphylococci (CoNS) are a common cause of prosthetic valve endocarditis (PVE). The purpose of this investigation was to compare the features of CoNS PVE to S.aureus and viridans streptococcal (strep) PVE within the International Collaboration on Endocarditis Prospective Cohort Study (ICE-PCS).

Methods
From 1/00 to 12/03, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries.

Results
Of the 351 cases of definite PVE in the ICE-PCS not associated with injection drug use, 64 (18%) were caused by CoNS. Early PVE (<60 day interval from valve surgery) occurred in 14% of patients. Compared to patients with S. aureus PVE, patients with CoNS PVE had similar predisposing factors including healthcare acquisition (45% vs. 53%, p=.13) and history of invasive procedure (33% vs. 42%, p=.18). More patients with CoNS PVE had cardiac abscess (47% vs. 22%, p<.01) and underwent surgery (59% vs. 44%, p=.07), however the in-hospital mortality (28% vs. 35%, p=.41) was similar. Compared to patients with viridans strep PVE, patients with CoNS PVE were more likely to have healthcare acquisition (45% vs. 2.2%, p<.01) and history of invasive procedure (33% vs. 15%, p=.04). Although more patients with CoNS PVE had cardiac abscess (47% vs. 24%, p=.01), the rate of surgery was similar (59% vs. 50%, p=.33). The in-hospital mortality (28% vs. 13%, p=.06) was higher in patients with CoNS PVE than patients with viridans strep PVE.

Conclusion
CoNS PVE is associated with a high rate of cardiac abscess and mortality. Further investigation is needed to understand the factors related to invasive infection and poor outcome.

ISCVID Poster 22

IDENTIFICATION AND ROLE IN ENDOCARDITIS VIRULENCE OF LIPOPROTEIN GENES IN STREPTOCOCCUS SANGUIS.

Sankar Das and Todd Kitten

Virginia Commonwealth University

Background
Streptococcus sanguis is a leading cause of infective endocarditis. Identification of surface proteins that are virulence factors would lead to a better understanding of the pathogenesis of streptococcal endocarditis and to the identification of targets for prevention and therapy. Lipoproteins represent a promising class of such surface proteins.

Methods
Bioinformatics was used to identify putative lipoprotein genes in the unfinished genome sequence of S. sanguis. We have so far identified 28. Signature-tagged mutagenesis (STM) by in vitro transposition is being employed to create mutations in these genes. These mutants will be tested in the rabbit endocarditis model.

Results
Out of 28 potential lipoprotein genes, we have attempted to mutagenize 12. Of these, 8 have been successfully mutagenized. Seven of the 28 lipoprotein genes appear to be in ABC transport operons. Most of them have homology to cation and sugar transporters. The ssaB gene, encoding a putative cation transporter, was mutagenized and tested in a competitive index assay in the rabbit model. The value obtained of 0.00016 was lower than any obtained in our previous STM studies.

Conclusion
ABC transport appears to be the most common function of the lipoproteins in S. sanguis. One ABC transporter, SsaB, appears to be required for virulence. We were unable to mutagenize four additional genes, suggesting that they are essential for growth in media. We therefore suspect that many of the remaining lipoprotein genes will be required for growth or virulence, and thus be promising targets for antibiotics or vaccines.

ISCVID Poster 23

INFECTIONS ASSOCIATED WITH INTRA CARDIAC DEVICES (ICD). WHAT COULD BE ITS BETTER MANAGEMENT?

de Alarcón A, Galvez J, Ruiz J, Miralles F, Reguera JM and Lomas JM on behalf of the Grupo Andaluz para el Estudio de las Enfermedades Infecciosas (GAEI)

Hospitales Universitarios Hospital Virgen del Rocío

Background
Some aspects of the management of ICD infections are not well defined.

Methods
Analysis of 152 patients with ICD infections (133 pacemakers and 19 implantable cardioverter defibrillators) collected from five hospitals of Andalusia (Spain) from 1984 to 2004.

Results
Infections were divided in "local infections" (only pouch infection, 54 pts) and "systemic infections" (wire infection with or without pouch infection, 98 pts). The most common organism isolated were coagulase negative staphylococci (42.7%), Staphyloccoccus aureus (25%) and gram-negative bacilli (13%), with 8% of polymicrobial infections. Echocardiography was performed in 84 systemic infections and showed vegetations (three of them > 2 cms) in wires or valvular tissue in 41 (49%). Antimicrobial treatment was the only therapeutic approach in 27 cases, with only two patients cured, 16 failures (59%) and 9 deaths (33%). Local debridement and partial device removal was attempted in 37 patients and obtained 12 curations (32%). Complete removal (as the first approach or after the failure with a conservative management) was performed in 124 patients (109 with percutaneous traction and 16 with cardiac surgery) with 112 curations (90%) and 8 deaths. Two patients with vegetations >2 cms experienced pulmonary emboli after percutaneous extraction, but it was well tolerated. Reimplantation was performed in two-stage procedure (median delay: 14 days) in 51 pts (3 developped infection in the new site) and in one-stage procedure in 55 (1 infection in the new site).

Conclusion
Complete removal of the complete system by percutaneous traction (despite great vegetations) appears the best approach. Reimplantation in one stage procedure was safe and shortened hospitalisation.

ISCVID Poster 24

THE EFFECT OF INITIATION OF ANTIBIOTIC THERAPY ON THE RISK OF EMBOLIZATION IN INFECTIVE ENDOCARDITIS: AN ANALYSIS FROM THE ICE PROSPECTIVE COHORT STUDY

Dickerman, Cabell, Abrutyn, Barsic, Cecchi, de Benito, Eisen, Fortes, Fowler, Miro, Lerakis, Pappas, Rubinstein, Sexton

New York University School of Medicine

Background
In previous smaller studies, the risk of embolization in infective endocarditis has been demonstrated to fall rapidly with the initiation of appropriate antimicrobial therapy. The purpose of this study was to determine if this finding would be reproduced in a much larger, multicenter international study, and to examine the clinical implications of these findings.

Methods
1779 case of definite IE from 39 centers in 16 countries were prospectively enrolled between January 1, 2000 and December 31, 2003. Data were obatined from a standardized case report form.

Results
In this cohort, 21.4% of patients experienced a clinically apparent embolic phenomenon. Almost half (46.3% or 176/380) of all embolic events occurred at the time of admission. Of all embolic events occurring after admission, 60.3% (123 of 204) occurred during the first three days of antibiotic therapy. Only 4.6% of the total cohort experienced an embolic event after receiving more than three days of effective antimicrobial therapy.

Conclusion
The risk of embolism in infective endocarditis falls rapidly after the initiation of appropriate antibiotic therapy. For patients in whom the diagnosis of IE is delayed several days after the initiation of antibiotics, as is commonly the case in clinical practice, the risk of embolism is low after diagnosis. This suggests that, as a group, these patients should not undergo surgery based on the risk of embolization alone. Further analysis is needed to a) identify subgroups (e.g., by organism, vegetation size or location) for whom a more aggressive approach may be warranted and b) examine the confounding effect of valvular surgery during index hospitalization on these data.

ISCVID Poster 25

EMERGENCE OF ERYTHROMYCIN AND CLINDAMYCIN RESISTANT ORAL BACTERIA ISOLATED FROM BLOODSTREAM FOLLOWING DENTAL EXTRACTIONS IN SPAIN

Diz P, Tomás I, Álvarez M, Saavedra E, Tomás M, Limeres J

*School of Medicine and Dentistry. Santiago University. Spain. *Microbiology Service. Xeral-Cíes Hospital. Vigo. Spain. *Research Laboratory. Juan Canalejo Hospital. La Coruña. Spain*.

Background
To date, numerous studies have demonstrated a high prevalence of oral bacteria resistant to the antimicrobials used in the current prophylactic regimens before certain dental procedures. The aim of this study was to determine the susceptibilities of oral bacteria isolated from the bloodstream after dental extractions against penicillin, ampicillin, amoxicillin, erythromycin, clindamycin and moxifloxacin.

Methods
Two hundred seventy four adults who required dental extractions under general anaesthesia were studied. Venous blood samples were collected from each patient at baseline, 30 seconds, 15 minutes and 1 hour after tooth extractions. Samples were inoculated in BACTEC plus aerobic and anaerobic blood culture bottles, and were processed in the Bactec 9240. The subculture and further identification of the isolated bacteria were performed by conventional microbiological techniques. A series of 207 oral bacteria were isolated: 149 streptococci, 23 obligate anaerobes and 35 “other bacteria”. The antimicrobial susceptibility was determined by the E-test method. The NCCLS performance standards were followed.

Results
A 3% of the streptococci were resistant to the beta lactam tested agents. The porcentage of bacterial isolates resistant to erythromycin and clindamycin were 43% and 21% respectively. In the obligate anaerobes group 30-43% and 17% showed resistance to beta lactams and clindamycin respectively, and they had a MIC90=256mg/l to erythromycin. The “other bacteria” group showed a MIC90 to beta-lactams, erythromycin and clindamycin of 1.5-4 mg/l, 24 mg/l and 256 mg/l respectively.

Conclusion
Most of the oral bacteria isolated from the bloodstream after dental extractions had high MIC values in vitro to erythromycin and clindamycin. The obligate anaerobes also showed high resistance percentages to penicillin, ampicillin and amoxicillin. These results could affect the usefulness of these prophylactic drugs in the prevention of bacteremia following dental procedures.

ISCVID Poster 26

DIABETICS HAVE INCREASED INCIDENCE OF INTRACARDIAC FISTULAE AND CORONARY ARTERY DISEASE IN A LARGE SERIES OF SURGICALLY TREATED INFECTIVE ENDOCARDITIS PATIENTS

Nick Dobrilovic, Brad Hirsch, Susan Sallach, Michelle Paul, Gail Peterson, Michael A Wait, W Steves Ring, Michael E Jessen, Christopher Cabell, Paul Pappas, J Michael DiMaio
University of Texas Southwetern Medical Center

Background
Limited data are available describing outcomes of diabetic infective endocarditis (IE) patients requiring surgical therapy. We present our surgical experience from a large, heterogeneous population representing a wide range of racial and socioeconomic patient populations.

Methods
The study was conducted as a retrospective review of 197 consecutive patients treated surgically for IE within a single system of university-based hospitals during a 13-year time interval. Twenty-five diabetic patients were identified and compared with the nondiabetic.

Results
In our series of patients requiring surgical treatment for IE, in-hospital mortality was 14% overall, 28% in diabetics, and 13% in nondiabetics (p=0.0431). Factors found to correlate with perioperative mortality are provided in table format.

"FACTORS CORRELATING WITH PERIOPERATIVE MORTALITY:"

	total (n=197)	diabetic (n=25)	nondiabetic (n=168)	p-value
mortality	28 (14%)	7 (28%)	21 (13%)	0.0431
mean age (years)	46 ± 14	56 ± 13	44 ± 14	0.0003
murmur	142 (72%)	11 (44%)	128 (76%)	0.0013
intracardiac fistula on echo	6 (3%)	3 (12%)	3 (2%)	0.0158
aspirin use	22 (11%)	7 (28%)	15 (9%)	0.0068
concomitant CABG	13 (7%)	5 (20%)	8 (5%)	0.0037
intraoperative PRBC (units)	3.7 ± 3.2	5.0 ± 3.3	3.6 ± 3.2	0.0306

Conclusion
Among surgically treated IE patients, diabetics (when compared to nondiabetics) had a higher in-hospital mortality. They were found to be older, more likely to use aspirin, and less likely to have a murmur detected on preoperative physical exam. Interestingly, there was an increased percentage of diabetics found to have an intracardiac fistula as compared to nondiabetics. Also, a disproportionate number of diabetics required concomitant coronary artery bypass grafting (CABG). Identification and understanding of factors that diabetic patients with IE manifest may impact clinical management and improve outcome.

ISCVID Poster 27

INFECTIVE ENDOCARDITIS IN HEMODIALYSIS PATIENTS: PROSPECTIVE TEN-YEAR REGISTRY IN A UNIVERSITY CENTER

Thanh Doco-Lecompte, Cristian Condrat, François Alla, Christine Lion, Edith Renoult, Jean-Pierre Carteaux, Christine Selton-Suty

University Hospital - Nancy - France

Background
Chronic hemodialysis is an evolving at-risk situation for endocarditis.

Methods
In order to describe infective endocarditis characteristics in the modern dialysis era, we reviewed the charts of all the hemodialysis (HD) patients included in the prospective database of the University Hospital of Nancy (France). During the period 1991-2003, 24 pts (6%) were included.

Results
There were 14 males and 10 females, aged 63 years [31-83]. IE was definite in 14 and possible in 10. The etiology of renal failure was hypertensive in 8 pts, diabetic nephropathy in 5 pts. Mean length of HD was 3.9±3.7 yrs. Primary HD hemoaccess was an arteriovenous fistula in 15 pts (65%). An underlying heart disease was noted in 14 (58%) cases (12 native, 2 prosthesis), and 2 had a pace-maker. Portal of entry was infection of intravascular access in 18 pts (75%). In 2 cases, IE occurred during the 2 months following a valvular replacement. An embolic event was noted in 11 pts (46%, cerebral in 7). Staphylococci were responsible of 18 cases (75%, S.aureus 12), S. oralis in 1 and blood cultures were negative in 5 pts. Surgery was performed in 9 pts (37%). In-hospital mortality was 25% for whole cohort, and 11% for surgical pts. Survival at 3 year follow-up was 25%.

Conclusion
This study confirms the high frequency of IE, particularly due to Staphylococci, in hemodialysis patients. Interestingly, the mortality was lower than in previous reports, especially in surgical patients.

ISCVID Poster 28

ENDOCARDITIS DUE TO MYCOBACTERIUM AVIUM SEROTYPE I: CASE REPORT

Claudio Querido Fortes, Fabio de Souza, Leandro Kasuki Jomori de Pinho, Gloria Maria Benamor Teixeira, Marcelo Iorio Garcia, Rogerio Gomes Fleury, Adriana Lucia Pires Ferreira, Ana Carolina da Silva Carvalho, Leila de Souza Fonseca

Hospital Universitario Clementino Fraga Filho - Universidade Federal do Rio de Janeiro

Background
A 50 year old man was hospitalized in March 2004 for evaluation of fever three months after aortic valve replacement with porcine valve due to bicuspid aortic valve. Physical examination showed a temperature of 38° C, a diastolic aortic murmur and conjunctival hemorrhages. Four blood culture sets were taken and incubated in a BacT / ALERT system. The diagnosis of prosthetic valve endocarditis was suspected, and the patient was placed on an empiric therapy of vancomycin associated with gentamicin plus rifampin. Transesophageal echocardiogram performed one day after the admission revealed vegetations on the prosthetic valve and on the tricuspid valve and showed a peri-prosthetic abscess with extension to the tricuspid annulus. Abdominal ultrasound revealed spleen abscess. At this point emergency cardiac surgery was indicated. Vegetation on the prosthetic valve and on the tricuspid valve and an aorta-right atrium fistula were found at surgery. Tricuspid vegectomy was performed and the prosthetic valve was replaced with a porcine prosthetic valve. At that time all blood cultures became positive for acid fast bacilli and clarithromycin IV was started. Unfortunately, there was deterioration in his condition and he died on the second post-operative day. The culture of valve grew acid fast bacilli that was identified as Mycobacterium avium serotype I, by molecular methods.

To our knowledge this is the first report case of Mycobacterium avium serotype I prosthetic valve endocarditis.

ISCVID Poster 29

STENTLESS PORCINE VALVE IN THE TREATMENT OF NATIVE OR PROSTHETIC AORTIC VALVE ENDOCARDITIS

A. Gamba, D. Giordano, P. Ferrazzi. F. Sutter, F. Gnecchi and L. Ravasio

Cardiacsurgery Dpt. O.O.R.R. Bergamo-Italy

Background
There are only few reports about the results of the surgical treatment of aortic endocarditis with porcine stentless valve.
The porpoise of this study is to revue the results of our experience in this field.

Methods
From 1998 to 2004, 13 pts with native valve endocarditis (NVE) and 6 pts with prosthetic valve endocarditis (PVE) underwent aortic valve replacement with a Freestyle stentless valve. Mean age was 60 +- 15 years; 18 pts were male; 8 pts were in NYHA class III or IV ;14 pts underwent operation before to complete the antibiotic treatment; all the pts had a bacterial infection; 6 pts had a previous aortic valve replacement with mechanical (3) stented (1) stentless (1) or homograft (1) valve. During surgery gross vegetation were found in 9 pts, annular abscess in 7 and mitral lesion in 3. In 18 pats stentless valve was implanted in subcoronary position and in 1 case as a root replacement; mitral valve was replaced in 2 pts and repaired in one.

Results
We did not observed hospital death or major complication. After a mean f-up of 43,3+- 26 months all the pts are alive: 18 are in NYHA class I with a good functioning of the valve and one is in NYHA class II with a moderate mitral perivalvular-leak and mild/moderate aortic regurgitation. We did not observed any case of early or late reinfection..

Conclusion
The early and medium time result in terms of mortality, reinfection or functioning of the valve are encouraging. A longer follow-up in a greater number of pts is necessary to try definitive conclusions but there are the premise to believe that stentless porcine valve could became a good homograft alternative in pts with aortic endocarditis.

ISCVID Poster 30

THE ADMINISTRATION OF LINEZOLID (LZ) EVERY 8 HOURS (TID) IS MORE EFFECTIVE THAN THE STANDARD ADMINISTRATION EVERY 12 HOURS (BID) IN THE EXPERIMENTAL ENDOCARDITIS (EE) DUE TO METHICILLIN RESISTANT (MRSA) OR GLYCOPEPTIDE INTERMEDIATE RESISTANT (GISA) STAPHYLOCOCCUS AUREUS.

Armero Y, Jiménez Alzate MP, Marco F, García de la Mària C, Moreno A, Almela M, de Benito N, Claramonte X, Sarasa M, Mestres CA, Pérez N, Gatell JM, Jímenez de Anta MT, Miró JM and the Hospital Endocarditis Study Group. IDIBAPS-Hospital Clínic Universitari. Barcelona. Spain.

Background
To evaluate the efficacy of Lz administered 3 times per day (tid) versus twice per day (bid) in therapy (Rx) of EE in rabbits using two clinical isolates: GISA (ATCC700788) and MRSA 277.

Methods
24 h after the catheter-induced aortic valve vegetations, 106 cfu/mL of bacteria were injected by iv route. 18 h later the animals were treated for two days using human-like pharmacokinetic model that simulates the human serum kinetics of Lz (600 mg iv bid) or Lz (600 mg iv tid). Peak and trough serum levels at 24 and 48h were: 13/2 mg/L and 17.5/3 mg/L, respectively for Lz administered bid. When Lz was given TID, trough serum levels reached in the rabbits at 24 and 48h of treatment were 6.2 mg/L and 8.3 mg/L respectively.

Results

Treat group	#survival/#total(%)	# sterile veg/# total(%)	Mean± SDlogCFU/gveg
GISA			
Control		0/27(0)	9±1.1
Lz(bid)	13/16(81)	0/13(0)	8.1±1.6*
Lz(tid)	17/17(100)	0/17(0)	5.4±1.6*
MRSA			
Control		0/15(0)	9±0.5
Lz(bid)	20/24(80)	0/20(0)	7.3±1.6
Lz(tid)	16/1 (95)	0/17(0)	6.5±1.8

Lz Rx was more active than no Rx ($p<0.05$ for both strains). For EE due to GISA, TID therapy was more effective than BID Rx for reducing the count of log CFU/g veg at 48h of Rx (*$p<0.01$). There was also a trend for TID schedule for the RX of EE due to MRSA ($p= 0.16$)

Conclusion
Early Lz activity (first 48h) can be improved when this drug is given TID and this schedule merits further investigation for the treatment of GISA or MRSA endocarditis.

ISCVID Poster 31

IN VITRO ACTIVITY OF TELITHROMYCIN AGAINST OF VIRIDANS GROUP STREPTOCOCCI (VGS) ISOLATED IN PATIENTS WITH INFECTIVE ENDOCARDITIS (IE) IN BARCELONA (SPAIN) FROM 1990 TO 2004.

Marco F, Armero Y, García de la Mària C, Amat E, Almela M, Moreno A, Claramonte X, Pérez N, Mestres CA, de Lazzari E, Gatell JM, Jiménez de Anta MT, Miró JM, and the Hospital Endocarditis Study Group. IDIBAPS-Hospital Clínic Universitari. Barcelona. Spain..

Background
To know the current incidence of resistance to telithromycin in VGS isolated in patients with endocarditis in our institution from 1990 to 2004.

Methods
A total of 111 consecutive VGS strains isolated from patients with IE were included in the study. Antimicrobial agents tested were: penicillin (PN), ceftriaxone (CR), erithromycin (ER), clindamycin (DA), telithromycin (TL), quinupristin/dalfopristin (Q/D). MICs were determined following the NCCLS recommendations.

Results
The species identified were as follows: Steptococcus bovis (28%), Streptococcus mitis (24%), Streptococcus oralis (21%), Streptococcus sanguis (7%), anginosus group (9%) and 11% miscellaneous. MICs 50/90 (mcg/mL) were: TL (0.007/2), ER (0.12/>128), DA (0.06/>128), Q/D (0.5/2), CR (0.06/0.5) and PN (0.06/0.5). Resistance to ER was detected in 50 (45%) isolates (18 S. bovis and 32 oral VGS). Among them, resistance phenotypes M was found in 9 (18%) isolates. TL was highly active against all isolates. Resistance to this compound was observed in 10 (9%) S. bovis isolates. All of them expressed a MLSB constitutive resistance phenotype. Some degree of penicillin resistance (MIC > 0.12 mcg/mL) was detected in 9 (18 %) and 11 (18 %) of ER-resistant and ER-susceptible strains, respectively.

Conclusion
All oral VGS tested were susceptible to telithromycin irrespective of the erythromycin susceptibility. TL could be considered as an option to amoxicillin in the prophylaxis of infective endocarditis in patients with beta-lactam allergy.

ISCVID Poster 32

DAPTOMYCIN WAS MORE EFFECTIVE THAN VANCOMYCIN IN THE TREATMENT OF EXPERIMENTAL ENDOCARDITIS DUE TO METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA).

García de la Mària C, Armero Y, Marco F, Soy D, Amat E, Moreno A, Almela M, Claramonte X, Mestres CA, Pérez N, Gatell JM, Jiménez de Anta MT, Miró JM and the Hospital Endocarditis Study Group. IDIBAPS-Hospital Clínic. Barcelona. Spain.

Background
Since the appearance of the glycopeptide intermediate resistance in the staphylococci, new alternative therapeutics to Vancomycin (Vanco) are needed. Daptomycin (Dapto) is a new drug and a possible alternative to Vanco. We evaluated the efficacy of Dapto in therapy of experimental endocarditis in rabbits using a clinical isolate: MRSA-277.

Methods
Dapto and Vanco MIC/MBCs MRSA strains were 0.12/0.5 and 2/2 mg/L respectively. 24 h after the catheter-induced aortic valve vegetations, 8 x 105 cfu/mL of MRSA were injected by iv route. 18 h later the animals were treated for two days with either Dapto (6 mg/Kg iv qd) or Vanco (1gr iv bid) given with a computer-controlled infusion pump system simulating the human serum kinetics. Peak and trough levels for Dapto and Vanco were: 86 and 15 mg/L, and 46 and 6 mg/L, respectively. Control rabbits were sacrificed at 16 hours. Treated rabbits were sacrificed after 6h and 48h. of ending therapy for Vanco and Dapto, respectively. Vegetations were quantitatively cultured.

Results

Treat group	#survival/#total (%)	#sterile veg/#total (%)	Mean ± SD log cfu/g Veg
MRSA/Control	-/-	0/15 (0)	9 ± 0.5
Vanco	16/16 (100)	5/16 (31)*	4.4 ± 2.6*
Dapto	18/19 (95)	13/18 (72)*	2.9 ± 3.2*

Therapy with Daptomycin was more effective than Vancomycin (*p<0.05) in sterilizing the vegetations and reducing the count of log CFU/g veg.

Conclusion
After two days of therapy Daptomycin was more effective than Vancomycin in the treatment of MRSA experimental endocarditis.

ISCVID Poster 33

PROGNOSTIC FACTORS OF EARLY PVE OUTCOME: REDUCING THE TIME OF THE DIAGNOSIS AND BEGINNING OF THERAPY

Atzev BG,Kobeleva EM,Nikolov D,Tschirkov A

University Hospital "St.Ekaterina",Sofia ,Bulgaria

Background
Despite of the advanced diagnostic and therapeutic methods, the early prosthetic valve endocarditis (PVE) is diagnosed rather late and this causes delay in therapy as well as high mortality rate.
The aim of our study is to prognosticate the outcome (mortality, survival) of the disease and it's correlation with the time of the diagnosis and the onset of the therapy.

Methods
Fifty-six patients (39 males &17 females) with definitive early PVE were analyzed retrospectively . They were divided into two groups: of very early diagnosis and treatment (<10 days)-G1 (37 patients) and between 11-90 days post surgery diagnosis – G2 (19 patients). We compared the in-hospital mortality and one year survival.

Results
Overall mortality was 12.5% (5,4% in G1 and 26,3% in G2). Patients with early (G2) PVE were more likely to die in –hospital the mortality than patients of G1. In-hospital mortality in the G2 was 4,8 times greater that of the G1. Percent of deaths of early PVE (G2) is significantly greater (71.4%) than that in group G1(28,6%). (p=0,038)

Overall 1-year survival was 82.1%(91,9% in G1 and 63,2% in G2). Patients with very early PVE(G1) survived 1,5 times more than patients with early(G2) . Percent of one year survival significantly decreased in G2 (26.1%) group than G1(73,9%). (p=0,022).

Conclusion
Reducing the time of diagnosis and start a therapy of patients with early PVE are very important prognostic factors for in-hospital mortality and 1year survival. Very early (G1) diagnosis and treatment decreased significantly the in-hospital mortality and increased 1-year survival.

ISCVID Poster 34

PROPIONIBACTERIUM ACNES PROSTHETIC VALVE ENDOCARDITIS (PAPVE)

Guío L.*, Sarriá C., De las Cuevas C., Gamallo C., Duarte J., Velayos R., San Martín JV., Rodríguez D.

Hospital Universitario de La Princesa. Madrid. Spain

Background
To determine the characteristics of PAPVE

Methods
13 definitive cases were prospectively collected since 1991 in our centre

Results
Ten valves were metallic and 3 biological. Six developed PAPVE within first year after the valve replacement surgery. All the episodes that occurred more than 1 year post-surgery had prior skin or mucosal manipulation. Delay diagnosis was between 3 to 12 months in 6 (58%). They presented as prosthetic dysfunction(4 patients), myocardial acute infarction or angor pectoris (3), constitutional syndrome and fever (2), repeated TIAs (3), one of them with fever, and skin lesions(1). At admission, 54% had fever, 61% congestive heart failure, 77% murmur, 7% skin lesions and 7% esplenomegaly. The microorganism time of growth was between 10 to 30 days in 4 samples . Echocardiographic findings were: 9 dehiscence, 2 estenosis, 1 vegetations,1 abscess. Three patients were treated with antibiotherapy, all of them relapsed when the treatment was withdrawn. Ten patients received surgery , 8 cured, 1 relapsed and 1 died. The more relevant macroscopic finding was the presence of abundant, grey and fragile pannus. Histology demonstrated absence of acute inflammatory signs, presence of organized thrombosis, fibrinous exudate and neoangiogenesis.

Conclusion
1.- PAPVE had epidemiological, microbiological, histological, clinical and echocardiographic features that can make difficult its diagnosis.
2.- Antibiotic treatment supress the organism but doesn´t eradicate it
3.- Surgical treatment is necesary for cure

ISCVID Poster 35

A PROSPECTIVE STUDY OF INFECTIVE ENDOCARDITIS IN THE NATIONAL CARDIOTHORACIC SURGICAL UNIT, MATER MISERCORDIAE UNIVERSITY HOSPITAL, IRELAND FROM JULY 2003 THROUGH DECEMBER 2004

Cotter MP, O'Brien DJ, Hannan M

Department of Clinical Microbiology, Mater Misericordiae University Hospital, Dublin, Ireland

Background
A prospective study of patients with Infective endocarditis(IE) commenced July 2003 in the National Unit for Cardiothoracic Surgery, Mater Misericordiae University Hospital (MMUH) , Dublin, in association with the International Collaboration on Endocarditis (ICE) study protocol. No previous study has presented the epidemiology, investigation and clinical outcomes of IE in the Ireland.

Methods
This is an ongoing prospective study of all possible and definate cases of IE identified in the MMUH, including patients diagnosed in our hospital, and those referred by peripheral hospitals. Patients are evaluated at presentation, and questionnaires are completed. Commencing in March 2005, additional blood cultures will be drawn for real-time molecular evaluations of causative organisms.

Results
40 patients were identified as probable or definate IE from July 2003 to December 2004. Of these cases, 27/40 (67.5%) were male and 13/40 (32.5%) were female. We isolated organisms from cultures in 20/40 (50%) of cases as follows:

Organism	Number of Patients
Staphyloccus aureus	8
Coagulase negative staphylococcus	2
Streptococcus bovis	3
Streptococcus pneumoniae	1
Strep viridans	4
HACEK group	1
Gram negative bacillus	1

The mortality rate was 15% (6/40), and complications were observed in 9/40 (22.5%) of cases. Complications included pulmonary, cerebral and vascular emboli, congestive cardiac failure, pericardial effusion and renal failure.

Conclusion
This is the first prospective study of the epidemiology of IE in the largest cardio-thoracic centre in Ireland. The most significant finding to-date is that causative organisms have been identified in only 50% of patients, and of these Staphyloccus aureus is the most prevalent organism identified.

ISCVID Poster 36

CHARACTERISTICS AND REGIONAL VARIATIONS OF INFECTIVE ENDOCARDITIS (IE) DUE TO GROUP D STREPTOCOCCI (GDS) IN FRANCE

E. Giannitsioti, C. Chirouze, A. Bouvet, I. Béguinot, F. Delahaye, J.L. Mainardi, M. Celard, L. Mihaila-Amrouche, V. Le Moing, B. Hoen

Université de Franche-Comté/University Hospital of Besançon

Background
The incidence of GDS (formerly S. bovis) IE markedly increased in France in the end of the 20th century. In an attempt to explain this phenomenon, we conducted a comparative analysis of GDS and oral streptococcal (OS) IE. This study was based on the already collected data from a large French survey that was conducted in 1999.

Methods
Five hundred fifty nine cases of Duke definite IE were prospectively recorded during 1999 in a population-based survey that was conducted in 7 French regions (16-million population). GDS and OS IE (139 and 80 cases respectively) were extracted from the database and compared.

Results
Patients with GDS IE were older (62.7 vs. 56.6 years, p=0.01) and had less often a previously known valve disease (33.8% vs. 67.1%, p<0.0001) than those with OS IE. Procedures at risk for IE were performed less frequently in GDS than in OS patients (14.8% vs. 24.1%, p=0.08). Diabetes, colon diseases, and cirrhosis were more frequent in the GDS group (p=0.006, p<0.0001 and p=0.08 respectively). Rural residents accounted for 31.0% of the GDS group but for only 15.2% of the OS group (p=0.001). Likewise the proportion of GDS IE was higher in the 6 regions with mixed (urban and rural) population (Franche-Comté 81.8%, Marne 68.7%, Lorraine 70.3%, and Rhône-Alpes 65.3%) than in the exclusively urban region (Paris and Ile de France 58.0%).

Conclusion
This study confirmed previously known characteristics of GDS IE (older age, less frequent prior valve disease) and highlighted rural origin as a potential new one.

ISCVID Poster 37

THE FIMA PROTEIN OF STREPTOCOCCUS PARASANGUIS ADHERES TO EXTRACELLULAR MATRIX PROTEINS

Taisei KANAMOTO, Cindy L MUNRO, Todd O KITTEN

Virginia Commonwealth University

Background
Infective endocarditis is a life-threatening endovascular infection causing substantial morbidity and mortality despite medical advances. Oral streptococci are recognized as one of the most important causative microorganisms of this disease. Lipoprotein receptor antigen I (LraI) family proteins have been found among a variety of streptococci and enterococci that frequently cause endocarditis, such as Streptococcus sanguis (SsaB), Streptococcus mutans (SloC), and Streptococcus parasanguis (FimA). FimA is a 36-kDa surface protein that is believed to be an initial colonization factor of damaged heart tissue in endocarditis and has been shown to be an effective vaccinogen in an animal model.

Methods
Histidine-tagged recombinant FimA (rFimA) obtained using the pQE30 system was prepared for this study. Fibrinogen, fibrin and fibronectin were coated to 96-well ELISA plates. Adherence of rFimA to these proteins and the effects of specific anti-serum, FeCl2 and MgCl2 on adherence were examined by ELISA.

Results
rFimA adhered to fibrinogen, fibrin and fibronectin. However, the amount of rFimA bound to fibronectin was less than to the other proteins. Specific anti-serum reduced rFimA adherence to both fibrinogen and fibrin. FeCl2 also reduced rFimA adherence; however, MgCl2 did not.

Conclusion
FimA appears to be an adhesin to fibrinogen and fibrin. The binding site of FimA to fibrinogen and fibrin may be shared with that to Fe2+. FimA may be a promising vaccine candidate for prevention of streptococcal endocarditis.

ISCVID Poster 38

DIABETES MELLITUS AND OUTCOME OF INFECTIVE ENDOCARDITIS

Kourany W, Cabell C, Miro JM, Hoen B, Fowler V, Pappas P, Abrutyn E, Olaison L, Habib G, Moreno A, Corey R and the ICE-MD investigators

Duke University Medical Center

Background
Infective endocarditis (IE) is a serious condition with substantial morbidity and mortality. Diabetes mellitus (DM) is present in up to 33% of IE patients, but the impact of DM on outcomes of IE remains unclear. The aim of this study is to determine the influence of DM on IE in-hospital mortality and morbidity.

Methods
The study included IE patients from the International Collaboration on Endocarditis Merged Database (ICE-MD) with known DM status, and no history of intravenous drug abuse. The outcome was compared between 150 patients with DM and 905 patients without DM.

Results
Compared to the non-diabetic patients, the diabetic patients were older (median age 59 versus 64, p<0.001), comprised more females (42.0% versus 31.9%, p=0.01), were more likely to be dialysis dependent (12.7% versus 4.0%, p<0.001), and had more comorbidities (41.5% vs. 26.7%, p<0.001). There was no difference between the two groups with respect to the presence of congestive heart failure, embolism, intracardiac abscess, new valvular regurgitation, or valvular vegetation. Diabetic patients had higher in-hospital mortality (30.3% versus 18.6%, p=0.001) and lower surgical rates (32.0% versus 44.9%, p=0.003). On multivariate analysis, DM was not an independent predictor of mortality (Odd Ratio [OR]=0.55, 95% confidence interval [CI] 0.19-1.54), but a significant interaction between DM and gender was found, as mortality was higher among diabetic males than non-diabetic males (OR 2.18, CI 1.08-4.35).

Conclusion
IE patients with DM have higher in-hospital mortality than those without DM. However, except for in males, DM alone is not an independent risk factor for mortality.

ISCVID Poster 39

EVALUATION OF AN ELISA PANEL FOR THE DIAGNOSIS OF INFECTIVE ENDOCARDITIS

S Lang, RW Watkin, PA Lambert, WA Littler, TSJ Elliott

Glasgow Caledonian University

Background
Staphylococci, streptococci and enterococci account for 85% of infective endocarditis (IE) cases. Diagnosis is difficult if the microorganism is not isolated, possibly due to prior antibiotic therapy. The aim of this study was to develop a serological assay panel for the diagnosis of IE caused by Gram-positive cocci.

Methods
A panel of three antigen-based ELISAs designed to measure antibody levels to selected prominent antigens on Gram-positive cocci was developed and applied to the diagnosis of IE. The assays were based on the detection of serum IgG specific to a Staphylococcus aureus whole-cell antigen preparation, SorA (35 kDa Streptococcus oralis immunogenic protein), and EfaA (immunodominant enterococcal antigen). Serum samples were collected from 104 IE patients confirmed as definite by the Duke criteria: 48 staphylococcal IE; 39 streptococcal IE; 17 enterococcal IE.

Results
Based on results using sera from patients diagnosed with Gram-positive coccal IE and healthy control individuals, the staphylococcal, streptococcal and enterococcal assays had a sensitivity of 88%, 66%, 82% and specificity of 95%, 74%, 90%, respectively. The serological test panel provided a means of distinguishing between patients with IE due to staphylococcal infection or infection with either streptococcal or enterococcal species.

Conclusion
The ability to establish confidently the cause of IE has significant implications for patient therapy. The diagnostic panel of ELISAs is independent of both microbial culture results and endocardial imaging. Neither is it affected by prior antibiotic therapy. This inexpensive and rapid assay has the potential to augment the Duke criteria for diagnosing Gram-positive coccal IE.

ISCVID Poster 40

EARLY RECONSTRUCTIVE SURGERY IN ACUTE MITRAL VALVE ENDOCARDITIS: TECHNIQUES AND ADVANTAGES

L. de Kerchove, D. Glineur, E. Lemaire, R. Verhelst, J Rubay, A. Poncelet, Ph. Noirhomme, G. El Khoury

Université Catholique de Louvain / Cliniques Universitaires Saint-Luc, Bruxelles, Belgique

Background
In acute endocarditis, removal of all infected tissue is mandatory before considering valve reconstruction. According to this principle and to the variability of lesion's location, reconstruction may require innovative techniques in addition to the classical techniques to obtain mitral valve competence.

Methods
Between 1992 and 2004, 63 patients underwent repair for acute mitral endocarditis. Indications for early surgery, defined as operation performed within the first 6 weeks of antimicrobial therapy, were as follow: large vegetation with/without septic emboli (47 pts); abscesses, intracardiac fistula or paraprosthetic leak (20 pts); congestive heart failure (30 pts); resistance to antibiotics (24 pts). Successful mitral repair was obtained with classical techniques in 25 patients only (40%) and with additional innovative techniques in 38 (60%) (pericardial, tricuspid, and homograft patching, flip-over). Prosthetic or pericardial rings were used in 30 and 6 patients, respectively.

Results
In-hospital mortality was 12.7 %. Two patients had early failure; one of them could be re-repaired. Mean follow up is 59 ±37 months (3 – 151 mo). There were 2 cardiac-related deaths, one patient had mitral valve replacement for endocarditis recurrence and three had re-repair for late failure. Five-yr survival was 75%, and 5-yr freedom from a) endocarditis recurrence, b) mitral valve replacement, c) mitral valve reoperation and d) any cardiac event, were respectively 98%, 98%, 92% and 70%.

Conclusion
Early reconstructive surgery in patients with acute endocarditis offers durable repair and excellent resistance to early and late infection despite generous use of prosthetic rings.

ISCVID Poster 41

SURGICAL MANAGEMENT OF INFECTIVE AORTIC ACUTE ENDOCARDITIS: LONG TERM RESULTS

David Glineur, Philippe Noirhomme, Alain Poncelet, Robert Verhelst, Parla Astarci, Valerie Lacroix, Bruno Absyl, Jean Rubay, Gebrine El Khoury.

University of Louvain Medical School, Brussels, Belgium

Background
To assess the immediate and long term results of surgically treated infective aortic acute endocarditis (IAE) and compare the different surgical approaches.

Methods
Between January 1990 and January 2003, 126 patients with IAE underwent aortic valve surgery: group I with prosthetic valve replacement (61 pts, mechanical: 43, biological: 18), group II with allo-autograft replacement (52 pts, allograft: 12, homograft: 40) and group III with valve repair (12 pts). Mean age was 56±16 years. Twenty six patients had prosthetic aortic valve endocarditis and 62 had paravalvular abscesses. Hospital mortality was 13%. Mean follow-up was 57±42 months. Twelve pts died during follow-up. Four pts pts developed late endocarditis

Results
There were no difference in preoperative data, indication for surgery and hospital mortality between the 3 groups except for heart failure witch was more frequent in group I. Five years survival, freedom from valve related event, and cardiac related event are respectively for group I, II, and III: 66, 87, 80 % (p=0.16); 80, 90, 92 % (p=0.64) and 64, 85, 76% (p=0.29). Pts with abscess had a lower survival than pts without abscess (p=0.046).

Conclusion
In this pts population, the choice of the replacement material seems of less importance in the surgical management of IAE.

ISCVID Poster 42

VANCOMYCIN PHARMACODYNAMICS AGAINST HETERO-RESISTANT STAPHYLOCOCCUS AUREUS (HGISA) IN AN IN-VITRO MODEL WITH SIMULATED ENDOCARDIAL VEGETATIONS (SEV)

Leuthner, KD; Rybak MJ

Anti-infective Research Laboratories; Wayne State Univ.

Background
Treatment failure of vancomycin in endocarditis has been documented with the emergence of hetero-resistant glycopeptide intermediate S. aureus (hGISA). Questions regarding vancomycin use in endocarditis caused by these organisms have been raised. We investigated the effect of optimizing vancomcyin pharmacodynamics alone or in combination with gentamicin in an IVPD model with SEV.

Methods
3 clinical isolates (2617, 2967, Mu3) with varying sensitivities to vancomycin were used. After determining MICs, a previously described SEV-PD model with initial inoculum of 9log10 CFU/g was used to evaluate regimens of vancomycin ± gentamicin. Simulated regimens included vancomycin 1g q12h, 2g QD and 2g LD, then 1g q12h. Each regimen was combined with gentamicin 5mg/kg QD. Simulations performed in duplicate with bacterial quantification occurring over 72h. MRSA 494 was the comparator organism.

Results
MIC's for vancomycin and gentamicin against 494, 2617, 2967 and Mu3 were 0.25, 0.5, and 2µg/ml and 0.5, 0.25, 0.75 and >32µg/ml respectively. Compared to 494, vancomycin regimens alone against 2617 were similar; the addition of a loading dose did not provide additional benefit. Limited activity was noted against Mu3 (gentamicin resistant). Vancomycin regimens combined with gentamicin increased the overall response, with bactericidal activity demonstrated by the 2g QD and 1g q12h combinations respectively.

Conclusion
Large doses daily or traditional q12h dosing combined with gentamicin against a hGISA demonstrated similar activity to a MRSA clinical isolate. Although the addition of a loading dose did not provide additional benefit, synergy with gentamicin may overcome the resistant nature of these organisms. Investigations into other hGISA are ongoing

ISCVID Poster 43

COMPARISON OF CLINICAL FEATURES, ECHOCARDIOGRAPHIC FINDINGS, AND OUTCOMES AMONG FEBRILE INTRAVENOUS DRUG USERS WITH STAPHYLOCOCCAL VERSUS NON-STAPHYLOCOCCAL INFECTIONS

Maulik D. Majmudar, MD and Richard E. Rothman, MD, PhD.

The Johns Hopkins Unversity - Department of Emergency Medicine

Background
Infections such as Staphylococcus aureus bacteremia (SAB) are common among intravenous drug users (IDUs). This study sought to determine the differences in clinical features, echocardiographic findings, and outcomes (complication, duration of stay and mortality) associated with SAB versus non-staphyloccocal bacteremia (NSB) among IDUs.

Methods
Prospective continuous enrollment of all patients with fever (T≥38.0 ˚C) and recent history of IDU from the JHU ED conducted between 3/98 and 9/00. All patients had at least two sets of blood cultures (BC) drawn and a transthoracic echocardiogram (TTE) ordered upon admission. Data was abstracted by chart review. Duke Criteria were applied and discharge summaries (DC sum) reviewed.

Results
1015 patients screened; 571 had complete data (BC, TTE, DC sum). BC positive in 191 cases: 76 with SAB and 115 with NSB. Major BC findings: 67% in SAB group versus 27% with NSB ($p<0.0001$). TTE findings: no significant difference between groups; mitral valve involved most frequently. Patients with SAB were more likely to have infective endocarditis (IE) per clinician's discharge diagnosis (DCDx) and Duke Criteria (DC) as compared to NSB patients: 75% vs. 29% by DCDx ($p<0.0001$) and 82% vs. 64% by DC ($p<0.02$). SAB patients also had a longer inpatient stay compared to NSB cases ($p<0.001$). There were no significant differences between the complications, or mortality between the two groups.

Conclusion
In IDUs with fever, those that have SAB are ~ three times more likely to have major culture findings, a higher likelihood of IE, and longer inpatients stays compared to those with NSB. Thus, SAB is an early indicator of IE and longer hospitalization among febrile IDUs.

ISCVID Poster 44

TWO CASES OF CARDIOBACTERIUM HOMINIS ENDOCARDITIS AND A REVIEW OF THE LITERATURE

Anurag Malani MD, Suzanne Bradley MD, Carol Kauffman MD

University of Michigan Medical Center

Background
Cardiobacterium hominis, a member of the HACEK group, is a rare cause of endocarditis (IE); there are 67 reported cases, 14 involving prosthetic valves (PVE). There is one case report of C. hominis IE after an EGD and none reported after a colonoscopy. We report 2 C. hominis PVE cases following colonoscopy.

Methods
Review of charts and English literature.

Results
Patient 1 was a 76 y/o woman with a porcine aortic valve (AV) who had a colonoscopy in 8/04. Five days later, she was admitted with fever. Blood cultures yielded C. hominis after 15 days. TEE showed AV vegetations. She received ceftriaxone for 5 weeks and remains well. Patient 2 was a 67 y/o man with a porcine AV who had an EGD/colonoscopy in 6/04. He was admitted in 10/04 with fatigue and dyspnea and found to have AV vegetations, para-valvular abscess. Blood cultures yielded C. hominis after 7 days. He underwent valve replacement, received ceftriaxone for 6 weeks, and remains well.

Conclusion
When compared with other HACEK organisms, C. hominis infects the aortic valve more frequently, has a longer duration of symptoms preceding diagnosis, shows a higher rate of cerebral emboli, and also grows very slowly (mean of 5.7 days). Laboratories should incubate blood culture bottles longer when HACEK are suspected. C. hominis is almost always susceptible to penicillin. Ceftriaxone,used successfully in our patients, is recommended by AHA Guidelines. The cure rate of known outcomes is 45/50 (90%) cases. For PVE, cure rate is 15/16 cases; valve replacement was required for 6.

ISCVID Poster 45

MORTALITY AND MORBIDITY IN PATIENTS INFECTED WITH THE HIV UNDERGOING CORONARY ARTERY BYPASS SURGERY: A CASE CONTROL STUDY

Mestres CA*, Jiménez-Expósito MJ**, Claramonte X**, Cartañá R*, Moreno A**, de Lazzari E***, Josa M*, Sued O**, Martínez E**, Pomar JL*, Gatell JM**, Mulet J*, Miró JM** and the Hospital Clinic Endocarditis Study Group. Departments of Cardiovascular Surgery*, Infectious Diseases** and Biostatistics***. Hospital Clinico. University of Barcelona. Barcelona. Spain.

Background
The increasing survival and the adverse metabolic effects associated to HAART have contributed to increase the cardiovascular risk and the need for cardiac interventions in patients infected with the HIV. Our objective was to evaluate mortality and morbidity in HIV-infected patients undergoing isolated coronary artery surgery in comparison with non-HIV-infected patients.

Methods
Seven HIV-infected (cases) and 21 non-HIV-infected (matched controls) patients undergoing isolated coronary artery surgery between June 1997 and January 2004 were retrospectively studied. Preoperative, operative, postoperative and follow-up data were recorded.

Results
There were no difference among groups regarding patient characteristics. Extracorporeal circulation and aortic cross-clamping times were shorter in the HIV-infected patients (p=0.002 and p=0.014, respectively). The percentage of patients with complications was similar in both groups [4 (57.1%) HIV-infected vs 12 (57.1%) non-HIV-infected; p = 0,6] with a slightly higher number of complications/patient in the non-HIV-infected group. The average total [27.1 ± 13.3 vs 8.8 ± 5.3 days; p = 0.003] and postoperative [18.2 ± 15.4 vs 7.9 ± 4.2 days; p = 0,08] length of stay were longer in the HIV-infected. No HIV-infected patient died and no cardiac reoperation was needed. Progression of the disease was not observed in any of the HIV-infected patients.

Conclusion
Coronary artery surgery is associated with good results in patients with HIV/AIDS infection without higher early and late morbidity and mortality. These patients had a longer length of stay. Extracorporeal circulation did not influence the progression of the HIV/AIDS infection.

ISCVID Poster 46

THE CRYOPRESERVED MITRAL HOMOGRAFT IN THE TRICUSPID POSITION FOR INFECTIVE ENDOCARDITIS. A VALVE THAT CAN BE REPAIRED ON THE LONG-TERM

Mestres CA*, Castellá M*, Claramonte X**, Paré JC***, Azqueta M***, Fernández C*, Miró JM**, Pomar JL* and the Hospital Clínico Endocarditis Study Group. Departments of Cardiovascular Surgery*, Infectious Diseases and Cardiology. Hospital Clinico. University of Barcelona. Barcelona. Spain.

Background
Cryopreserved mitral homografts (CMH) have been used for infective endocarditis (IE). The knowledge about long-term performance and surgical options that may eventually be used is limited.

Methods
In October 1991, a 34-year-old intravenous drug addict and HIV-infected male was operated for tricuspid valve (TV) acute IE with sepsis and pulmonary embolism. Blood cultures grew candida and S. aureus. He was in CDC class C3 with a CD4 count of 43. Viral load was not available. Large vegetations were found together with destruction of the anterior leaflet. Tricuspid valve replacement was performed using a CMH and discharged on the 25th day. He presented with a new episode of TVIE medically cured 4 years later. He quit drug addiction and placed on HAART. Sequential echocardiography revealed progressive severe tricuspid regurgitation. In 2003 right ventricular failure became intractable. At this point CD4 count was 144 and viral load <20 c/mm3.

Results
Reoperation was performed on May 17, 2004. Surgical findings were annular dilatation and lack of tissue on the free edge of the middle scallop of the posterior leaflet of the CMH. This lesion was repaired and annular remodeling achieved with a 32 mm Carpentier-Edwards Physio ring. He was discharged 10 days after redo surgery. The patient is doing well, with stable immunology and leading active life in January 2005. Doppler echocardiography shows no tricuspid regurgitation.

Conclusion
This case illustrates an uncommon situation, the possibility of repairing a CMH implanted for TVIE in a patient with new late episode of IE.

ISCVID Poster 47

CARDIAC SURGERY IN PATIENTS INFECTED WITH THE HUMAN IMMUNODEFICIENCY VIRUS (HIV). A PART OF THE REGULAR PRACTICE AT A TERTIARY-CARE INSTITUTION

Mestres CA*, Jiménez-Expósito MJ**, Claramonte X**, Cartañá R*, Moreno A**, de Lazzari E***, Josa M*, Sued O**, Martínez E**, Pomar JL*, Gatell JM**, Mulet J*, Miró JM** and the Hospital Clinic Endocarditis Study Group. Departments of Cardiovascular Surgery*, Infectious Diseases**, Biostatistics***. Hospital Clinico. University of Barcelona. Barcelona. Spain.

Background
It is not clear whether cardiac surgery accelerates the progression of the disease in HIV-infected patients. There is scanty information in the literature regarding this subset of patients. Retrospective analysis of the clinical and immunological evolution of HIV-infected patients undergoing cardiac surgery.

Methods
Between 1985 and 2004, 38 HIV-infected patients (36 male, 9 female), mean age 31.25 years (19-66) underwent 44 operations. Diagnosis was acute endocarditis 26, non-infected valves 5, ischemic heart disease 7. Ten were reoperations (22.7%), 27 intravenous drug addicts (71.1%). Preoperative diagnosis of HIV infection ranged between the admission and 15 years before surgery (mean 2.4); in 16 was performed in the referring admission. Preoperative CD4 count in 34 operations with a mean of 394.8 . There was coexistent hepatitis C in 17. Operations performed were AVR 17, TVR 7, CABG 7, MVR-AVR 5, MVR 5, other 3. Fourteen valve homografts were used, 7 in aortic, 6 in tricuspid and 1 in mitral positions.

Results
Hospital mortality was 7 cases (18.4% patients, 15.9% operations). Follow-up is 100% complete up to 17 years (mean 6.15). One patient developed AIDS (CDC). CD4 count during the follow-up increased in 18 cases (>600). Two patients required reoperation. Actuarial survival at 5, 10 and 15 years is 68%, 60% and 60%.

Conclusion
HIV-infected patients have adequate postoperative late survival. No increase in the conversion to AIDS has been observed. They are managed by us in the same way as non-infected patients, exception made of intraoperative and ward precautions by the managing team.

ISCVID Poster 48

PREOPERATIVE RISK STRATIFICATION IN INFECTIVE ENDOCARDITIS. VALIDATION OF THE EUROSCORE RISK MODEL IN A NON-SELECTED POPULATION. A PRELIMINARY REPORT.

Mestres CA*, Castro MA*, Moreno A**, Claramonte X**, Marco F***, Cartañá R*, Paré JC****, Pomar JL*, Josa M*, Mulet J*, Miró JM** and The Hospital Clinic Endocarditis Study Group. Hospital Clinic. University of Barcelona. Barcelona. Spain

Background
Acute infective endocarditis (IE) is a high-risk situation. There is lack of data regarding risk assessment before open-heart surgery (OHS) and its impact on prediction of in-hospital mortality.

Methods
All patients with IE undergoing OHS between January 1995 and May 2004 were studied. Additive and logistic EuroSCORE risk stratification systems were determined. ROC curves were considered to have good correlation with areas >0.7, very good >0.8, excellent >0.9.

Results
There were 147 patients, 69.% male, mean age 56.3±15.9 (22-83). Active IE 91.2%, iv drug addicts 10.9%, HIV+ 5.4, dialysis 3.4%, reoperative surgery 27.2%. Emergency surgery was performed in 29.9%. Native valve location: aortic 43.5%, mitral 17%, combined 11%. Prosthetic valves: aortic 11.6%, mitral 7.5%, combined 4.2% and PM/AICDs 5.9%. Predominant pathogens were staphylococci 37.4%, streptococci 29.3%, enterococci 9.5%, others 16.6%, culture negative 6.8%. Mean additive EuroSCORE was 10.1±3.8 (2-19), median 10, and mean logistic yielded an expected mortality of 25.6±20.8% (1.5-94.2%) with a median of 18.95%. Overall in-hospital mortality was 32.7%. ROC curves showed excellent correlation in native mitrals (0.937), very good in the overall group (area 0.826), native valves (0.814), streptococcal (0.856) and staphylococcal infection (0.834) prosthetic mitrals (0.833) and good in prosthetic valves (0.779), native aortic (0.778) and prosthetic aortic (0.729).

Conclusion
There is very good correlation in the overall group for logistic EuroSCORE prediction and actual mortality. There is good correlation in all subgroups, especially for prosthetic valve IE, staphylococcal and streptococcal infection

ISCVID Poster 49

HEART TRANSPLANTATION FOR ACUTE COMPLICATED AORTIC ROOT INFECTIVE ENDOCARDITIS

Mestres CA*, Cartañá R*, García-Valentín A*, Moreno A**, Orrit J*, Loma-Osorio P*, Josa M*, Azqueta M***, Perez-Villa F***, Miró JM** and the Hospital Clinico Endocarditis Study Group. Departments of Cardiovascular Surgery*, Infectious Diseases** and Cardiology***. Hospital Clinico. University of Barcelona. Barcelona. Spain.

Background
Complicated infective endocarditis (IE) with annular destruction may become technically challenging. Heart transplantation may represent a radical solution in desperate cases. Scant reports in the literature refer to prosthetic valve endocarditis.

Methods
In a 25-year-old male with cardiogenic shock because of native aortic valve IE, blood cultures grew methicillin-resistant S. aureus. Emergency surgery was performed on August 10, 2004. A large circumferential aortic root abscess was debrided and aortic root replacement performed with a cryopreserved aortic valve homograft (CAVH). Intraaortic balloon pump support due to low cardiac output was required. Four days later a left internal mammary artery-to-left anterior descending coronary artery bypass was performed for left main stenosis and the chest closed. He became afebrile and heart failure controlled. Sequential echocardiography revealed progressive involvement of the neo-aortic root, the pulmonary and tricuspid valves with vegetations and abscess extension

Results
Reoperation was performed on August 31. The implanted CAVH was found to have normal function and anatomy.A huge abscess extending from below the CAVH involved pulmonary and tricuspid valves being this replaced with a stentless porcine valve. Intraoperative uncontrollable left heart failure required implantation of a left ventricular assist device. Twenty-four hours later a heart became available and ortothopic heart transplantation performed. The patient was discharged fully recovered. He is doing well leading an active life four months after transplantation.

Conclusion
This uncommon case illustrates that complicated IE with annular involvement and massive destruction of the fibrous cardiac skeleton can only be treated with an aggressive therapy as cardiac replacement.

ISCVID Poster 50

VASCULAR INFECTION AND BIOLOGICAL TISSUE. BEYOND OF A DECADE OF EXPERIENCE AND LESSONS LEARNED.

Mestres CA*, Marco F**, Josa M*, Moreno A***, Cartañá R*, García de la María C**, Claramonte X**, Pomar JL*, Jimenez-Expósito MJ***, Mulet J*, Miró JM*** and the Hospital Clinico Endocarditis Study Group. Departments of Cardiovascular Surgery*, Microbiology** and Infectious Diseases***. Hospital Clinico. University of Barcelona. Barcelona. Spain.

Background
Vascular infection (VI) is challenging with high morbidity and mortality. We report the experience and mid-term results with large-caliber arterial homografts (LCAH) in the treatment of VI.

Methods
Between October-1992 and January-2005, 78 patients underwent 82 operations with LCAH implantation. In 31 VI was diagnosed 32 times. There were 27 males and 4 females with a mean age of 63.2 years (38-78). Diagnostics were prosthetic VI (abdominal aortic, aortofemoral, femoropopliteal, ascending aorta and femoral) and primary infection (aorta, iliac and femoral). Isolated pathogens were C.Albicans (5), S. aureus (4), C. burnetii (1), Salmonella (3), P. aeruginosa (1), Enterococcus (1), E. faecalis (2), E. faecium (1), Coagulase negative Staphylococci (3) and MRSA (1), culture negative in 8 cases. There were 3 polybacterial infections Operations performed were aortoiliac/femoral graft, iliofemoral graft, femorodistal, ascending aorta and axillofemoral. Emergency/urgent surgery was performed in 56.5%. Single homografts were used in 21 and composite in 11. Four were HIV+.

Results
Hospital mortality was 34.3% because of multiple organ failure (4), sepsis (3), pneumonia (1), ruptured anastomosis (1), myocardial infarction (2). One patient died at five years because of suicide. Overall survival at 10 years is 59%. Mean follow-up is 48.4 months (1-120) with no recurrence of infection.

Conclusion
LCAH show adequate behaviour as vascular substitute in complex VI. Reinfection on the long-term is almost negligible. LCAH are appropriate for vascular reconstruction in high-risk patients as confirmed by the absence of late reinfection. Longer follow-up is needed to fully establish the actual role of human tissue in VI.

ISCVID Poster 51

Efficacy of Oral Linezolid (LNZ) and Amoxicillin (AMX) in the Prophylaxis of Experimental Endocarditis (EE) due to Vancomycin-Susceptible (VAN-S) and –Resistant (VAN-R) Enterococcus faecalis (Efs)

J. M. Entenza, J. Vouillamoz, M. Giddey, R. Leclercq, P. Moreillon
University of Lausanne/DMF

Background
Guidelines for endocarditis prophylaxis due to Enterococcus spp. advocate 2g of oral AMX in moderate risk patients and 1g of i.v. VAN plus gentamicin in high risk patients. Since enterococci are increasingly resistant to VAN, we sought oral alternatives for endocarditis prophylaxis in patients potentially colonized with such organisms. LNZ and AMX were tested.

Methods
1 or 2h before bacterial challenge, rats with sterile aortic vegetations were treated with human-simulated kinetics produced by 600mg oral LNZ (2 or 4 doses every 12h) or 2g oral AMX (single-dose). Rats were inoculated with 105 CFU (ID90) of Efs JH2-2 (VAN-S; AMX-S) or UCN-41 (VAN-R; AMX-S). Animals were killed 3 days later.

Results
MICs (mg/l) for JH2-2 and UCN41 were 0.25-0.5 of AMX, 1-2 of LNZ , and 2->64 of VAN, resp.Results in animals were (infected rats/total); † P< 0.05 vs controls

	VAN-S JH2-2	VAN-R UCN-41
Controls	9/9	10/10
LNZ 600mg (2 doses every 12h)	2/9 †	4/10 †
LNZ 600mg (4 doses every 12h)	ND	0/12 †
AMX 2g (single dose)	0/10 †	0/10 †

Conclusion
LNZ prevented EE due to VAN-S and VAN-R Efs, but required 4 doses over 48h for full efficacy. In contrast, single-dose AMX fully prevented EE due to both strains. AMX also prevented EE in rats challenged with 10x the ID90 (not shown). Since most Efs isolates are susceptible to AMX (Oprea, JAC 2004) AMX is appropriate for prevention of Efs endocarditis. Moreover, high-level prevention of EE (10x the ID90) by oral AMX suggests that this regimen could be appropriate in high risk patients.

ISCVID Poster 52

ACTIVITY OF BACTERIOPHAGE CPL-1 LYSIN AGAINST PENICILLIN-RESISTANT STREPTOCOCCUS PNEUMONIAE ENDOCARDITIS IN VITRO AND IN RATS WITH EXPERIMENTAL ENDOCARDITIS (EE)

J. M. ENTENZA, J. M. LOEFFLER, A. BIZZINI, J. VOUILLAMOZ, M. GIDDEY, V. A. FISCHETTI, P. MOREILLON

University of Lausanne/DMF

Background
S. pneumoniae, a common human pathogen, is becoming increasingly resistant to antibiotics worldwide. Alternative treatment strategies need to be explored. Lysin Cpl-1 is a muramidase, encoded by a pneumococcal phage, that binds to wall-associated choline of S. pneumoniae and rapidly kills these bacteria. We evaluated the activity of Cpl-1 against a penicillin-resistant S. pneumoniae (strain WB4) in vitro and in rats with EE.

Methods
In vitro killing by Cpl-1 (100 mg/l) against S. pneumoniae WB4 was determined in 50mM phosphate buffer. EE was induced by inoculating rats with sterile aortic vegetations with 107 CFU S. pneumoniae WB4. 24h later, animals were treated with an intravenous bolus of 125 mg/kg followed by continuous infusion of 125 mg/kg/h for 6h. Rats were sacrificed at 0, 0.5, 2 and 6h. Blood and vegetation cultures were performed.

Results
In vitro, Cpl-1 reduced the viability of S. pneumoniae WB4 by >7 log10 CFU within 15min. In vivo, CPl-1 cleared S. pneumoniae WB4 from the blood within 30min, and decreased bacterial titers in vegetations: 1-2 log10 CFU within 30min, >4 log10 CFU within 2h and >5 log10 CFU within 6h (P< 0.05 vs. controls).

Conclusion
Cpl-1 was rapidly bactericidal against penicillin-resistant S. pneumoniae in vitro and in vivo.In vitro, Cpl-1 kills >7 log10 CFU S. pneumoniae WB4 within 15 min. In EE, Cpl-1 achieved a decrease in pneumococcal counts of >4 log10 CFU both in blood (within 30min) and in vegetations (within 2h). CPL-1 shows promise as an effective, novel approach, for the therapy of S. pneumoniae infections.

ISCVID Poster 53

DAPTOMYCIN EFFICACY IN A RAT MODEL OF INFECTIOUS ENDOCARDITIS WITH SUBCUTANEOUS FIBRIN CLOTS

Lawrence I. Mortin, Tongchuan Li, Andrew Van Praagh, Shuxin Zhang, Xi-Xian Zhang, and Jeff Alder

Cubist Pharmaceuticals, Inc.

Background
New animal models of infectious endocarditis (IE) are needed to screen novel antibiotics prior to conducting clinical trials. Daptomycin is a new antibiotic with rapid bactericidal activity vs. a wide range of Gram positive bacteria commonly associated with endocarditis. Daptomycin is currently under evaluation in a Staphylococcus aureus IE clinical trial. We tested daptomycin in a rat model of IE vs. Staphylococcal and Enterococcal species.

Methods
Fibrin clots were prepared in 96-well plates by combining 250 uL 3% bovine fibrinogen containing 4 million CFU/mL with 12.5 uL of 250 U/mL thrombin per well. Clots incubated for at least 1 hr at 37ºC were implanted subcutaneously onto the backs of rats. Six hours after implantation, rats were dosed daptomycin, saline, or a comparator antibiotic, for up to 6 days. One day after the last dose, animals were euthanized and clots harvested for either histopathology or homogenization and serial plating to measure CFUs/clot.

Results
Daptomycin, at clinically comparable doses, resulted in a significant time- and dose-dependent reduction in bacterial CFUs/clot, vs. S. aureus or vancomycin-resistant Eneteroccus faecium (VRE). Daptomycin was similarly efficacious vs. methicillin-susceptible and -resistant S. aureus, unlike nafcillin, which is ineffective vs. MRSA. Daptomycin was superior to vancomycin vs. MRSA fibrin clots and to linezolid vs. VRE fibrin clots.

Conclusion
Daptomycin penetrates into subcutaneous fibrin clots and kills Gram positive bacteria in rats. Daptomycin may be able to treat fibrous vegetations containing Gram positive bacteria, such as those seen in IE. Data from the current clinical trial is necessary to validate these results.

ISCVID Poster 54

EPIDEMIOLOGY, CLINICAL PRESENTATION AND IN-HOSPITAL OUTCOME OF PATIENTS WITH INFECTIVE ENDOCARDITIS CAUSED BY HACEK GROUP BACTERIA

David Murdoch, Stephen Chambers, Francesc Marco, Christopher Woods, Dan Wray, Enrico Cecchi, Emilio Bouza, Paul Pappas, Margaret Hannan, Tatiana Vinogradova, Ralph Corey, John Harkness, Cristina Garcia De La Maria, Danny Benjamin, Christopher Cabell, for the ICE Investigators

Department of Pathology, Christchurch School of Medicine & Health Sciences, Christchurch, New Zealand

Background
Previous studies of infective endocarditis (IE) caused by HACEK group bacteria (*Haemophilus* sp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* sp.) have been retrospective case series. We sought to determine the epidemiology, clinical characteristics and outcome of patients with HACEK IE using the International Collaboration on Endocarditis (ICE) Prospective Cohort Study.

Methods
From January 1, 2000 through December 31, 2003, 2071 cases of IE were prospectively enrolled by 39 centers in 16 countries. Of these, 41 (2%) had HACEK group IE: 35 definite; 6 possible.

Results
The median age of patients with HACEK IE was 45 years (range 23, 79) and 30 (73%) were male. Predisposing factors for IE were identified in 28 (68%) patients: native valve abnormalities (34%), prosthetic valves (29%), congenital heart disease (17%) and previous IE (5%). Echocardiographic evidence of IE was present in 33/41: including vegetations (68%; aortic valve 37%, mitral valve 32%), new valvular regurgitation (66%; aortic valve 37%, mitral valve 34%) and paravalvular abscess (17%). Treatment varied, but included cephalosporin use in 38/41 and surgery in 18/41 (44%). Complications occurred in 22 (54%) patients: stroke (24%), systemic embolization (20%), congestive heart failure (17%), intracardiac abscess (15%), and two deaths.

Conclusion
In this large prospective cohort of IE, 2% were caused by HACEK group bacteria. Aortic and mitral valves were affected with approximately equal frequency. Surgery and morbidity were substantial (50% each), but mortality lower than that observed in the larger ICE prospective cohort

ISCVID Poster 55

ANTIRETROVIRAL DRUGS, LIPID PROFILE AND CARDIAC FUNCTION IN HIV INFECTED PATIENTS IN YAOUNDE CAMEROON.

Ngu Blackett K, Noffe T, Mbuagbaw J, Wawo Yonta E, Ntsekhe M, Wiysonge CS

Department of Medicine and Specialties, FMSB, University of Yaounde I, Cameroon.

Background
Cardiac involvement in HIV infection, may be due to direct viral tropism,TB, endocarditis, neoplastic processes (lymphoma, Kaposi's sarcoma), and malnutrition. HAART treatment reduces viral load, and improves immunity but is associated with lipid disorders, lipodystrophy, insulin resistance and increased risk of ischaemic heart disease (IHD)Subsidized ARV treatment is now available in Cameroon, a low risk area for IHD, prompting us to ask, "does HAART do the heart more harm than good."

Methods
Between August and December 2004, following informed consent, 71 confirmed HIV positive patients with no previous history of cardiovascular disease.were enrolled into a cross sectional descriptive study. 31 (43%) had received ARV therapy for a mean of 8 (1-31). months. Full clinical assessment, lymphocyte typing, lipid profile, ECG, and cardiac echo were undertaken and the two groups compared.

Results
Treatment with HAART was associated with a significant rise in total
cholesterol ($p=0.04$), but not LDL ($p=0.12$), nor HDL ($p=0.18$), cholesterol. ECG changes were present in 79% of patients, with T wave changes in 48.8%. There was no statistical correlation between HAART and ECG changes. Echocardiography showed cardiac function was better in patients on HAART than those without, but this did not attain significance. Poor cardiac function was associated with poor clinical state and weight loss ($p<0.05$) rather than CD4 count. .

Conclusion
In areas of low risk of IHD the impact of ARV therapy is to improve cardiac function and the increase in cholesterol may be of limited significance over the short term.

ISCVID Poster 56

TUBERCULOUS PERICARDITIS AND HIV INFECTION IN CAMEROON

Ngu Blackett K, Duquesne CN, Mbuagbaw J, Ntsekhe M, Wiysonge CS

Department of Medicine and Specialties, FMSB, University of Yaounde I, Cameroon.

Background
HIV/AIDS has led to a rise in the incidence of tuberculous pericarditis in Africa, but the effect of HIV infection on the clinical presentation, response to treatment, and outcome of the disease is not well documented; hence the need for this prospective cohort study.

Methods
Between January 2002 and December 2004, incident cases of tuberculous pericarditis at the University Teaching Hospital in Yaounde Cameroon were enrolled following informed consent, offered voluntary HIV counselling and testing, and CD4 cell counts determined for HIV infected patients. All patients received six months of conventional anti-tuberculous drugs and were followed to establish the clinical status at six months.

Results
Tuberculosis caused 53% of pericardial effusions and 74% of tuberculous pericarditis patients were HIV positive. At the time of diagnosis, HIV positive patients were more likely to have congestive heart failure (P=0.029), sinus tachycardia ((P=0.001), right atrial collapse (P=0.001), and microvoltage (P=0.029). No intra-pericardial finding on echocardiography, including size of pericardial effusion, was related to HIV status. Twenty patients (32%) are known to have died within six months of diagnosis. HIV co-infection (P=0.015) and low CD4 cell count (<200/mm3) (P=0.014) increased the risk of dying from tuberculous pericarditis.

Conclusion
Tuberculous pericarditis is common in our setting and is strongly associated with HIV infection. HIV co-infected tuberculous pericarditis patients are sicker on admission and have a higher risk of death, but this is not explained by the severity of the pericardial disease.

ISCVID Poster 57

THE INVESTIGATION AND MANAGEMENT OF PERICARDITIS IN AFRICA

Ntsekhe M, Wisonge CS, Mayosi BM for the IMPI investigators

University of Cape Town & Groote Schuur Hospital

Background
Tuberculosis causes most pericarditis in Africa. The incidence has increased with HIV. The effect of HIV on the clinical presentation diagnosis, response to treatment, and impact on survival is not known. To study these issues, IMPI Africa conducted a prospective registry of suspected TB pericarditis.

Methods
Patients with suspected TB pericarditis in 15 hospitals across Africa were enrolled. They were classified as definite, probable or possible TB pericarditis based on previously accepted criteria. Follow up was at 3 and 6 months.

Results
185 patients median age 33 years, were recruited. 52/93 (56%) who consented to HIV testing, tested positive. 74/185 (41%) were suspected of being HIV infected. There was a close correlation between clinical suspicion of HIV and being seropositive. 97% of patients had a CXR, 64% an ECG, and 94% either ultrasound or echocardiography. 30% underwent a pericardiocentesis Pericardial effusion was the most common diagnosis 79%. 7% of patients had a definite diagnosis, 5% probable, and 48% possible. In 37% there was insufficient information and in 3% an alternative diagnosis was made. 59% of patients were put on adjuvant steroids Patients with clinical HIV were more likely to present with significant symptoms of heart failure; they had more pulmonary TB, were more likely to have ST segment deviation on ECG and were least likely to receive steroids.

Conclusion
Pericardial effusion is the most common manifestation of TB pericarditis. Clinicians do not rely on a bacteriological diagnosis to commence anti-TB therapy. Patients likely to be HIV sero-positive presented sicker with evidence of dissemination.

ISCVID Poster 58

ABSOLUTE RISK RATES FOR ENDOCARDITIS AND DENTAL TREATMENT

Thomas J. Pallasch, D.D.S., M.S.

University of Southern California

Background
Bacterial endocarditis has routinely been attributed to dental treatment procedures without an absolute risk rate (ARR) determination.

Methods
This ARR can be determined from the following data: 1) endocarditis risk in the general US population is 4/100,000 personyears (11,200 annual cases), 2) viridans group streptococci (VGS) cause 25% of this endocarditis (2800 cases), 3) a 250 million US population visits a dentist 1.6 times per year (400 million visits) and 4) the ARR for endocarditis is: general population (4/100,000 personyears), previous endocarditis (600/100,000), cardiac valve prosthesis (500/100,000), rheumatic heart disease (400/100,000), congenital heart disease (120/100,000) and mitral valve prolapse with regurgitation (52/100,000 personyears).

Results
1) If all VGS endocarditis is caused by dental treatment, the ARR in the general populations is: 1/142,857.
2) If 1% of all VGS endocarditis is caused by dental treatment: the ARR is 1/14,857,000.
3) If 1% of VGS endocarditis is caused by dental treatment, the ARR for "high-risk" patients is:
a) Previous endocarditis: 1/95,238
b) Cardiac valve prosthesis: 1/114,285
c) Rheumatic heart disease: 1/142,857
d) Congenital heart disease: 1,476,190
e) MVP with regurgitation: 1/1,098,000

Conclusion
Considering these approximate ARRs, the unproven efficacy of antibiotic prophylaxis, its contribution to microbial antibiotic resistance, the risk of penicillin anaphylaxis and multiple daily bacteremias from normal living activities, the use of antibiotic prophylaxis to prevent endocarditis from dental treatment in all except possibly the highest risk patients defies evidence-based justification.

ISCVID Poster 59

NON BACTERIAL THROMBOTIC ENDOCARDITIS (NBTE) IN A PATIENT WITH GIANT CELL ARTERITIS AND PROSTATE CANCER.

Eftychiou C MD, Fanourgiakis P MD, Vrionis E MD, Samarkos M MD, Golfinopoulou S MD, Skoutelis A MD, Prof of Medicine.

5th Department of Internal Medicine Evangelismos Hospital

Background
INTRODUCTION:
Typical feature of NBTE is the formation of vegetations consisted of a mesh of fibrin and platelets. NBTE is associated with a wide range of diseases including cancer and autoimmune disorders. Valvular endothelium damage and hypercoagulability are the main pathogenetic mechanisms. When fever is a feature of NTBE bacterial endocarditis must be ruled out.

Methods
CASE REPORT:
A 76-year-old man was admitted for low grade fever during the last three months. Physical examination revealed a cardiac systolic murmur and digital rectal examination was suggestive for prostatic cancer. Abnormal laboratory findings included: anemia, elevated CRP, ESR> 100 and elevated PSA. Echocardiogram revealed the presence of vegetation on the aortic valve. An antibiotic regimen for infective endocarditis was initiated. Blood cultures and other laboratory tests for identification of microorganism were negative. There was no response of the fever and therefore a temporal artery biopsy was carried out; which revealed giant cell arteritis. Prednisone was initiated with prompt resolution of the fever and decrease of CRP and ESR. Histology of the prostate biopsy revealed carcinoma

Conclusion
NBTE is a difficult antemortem diagnosis if the underlying disease is accompanied by fever. If the diagnosis of probable infective endocarditis is established but cultures and serology are negative and there is no response to antibiotic treatment, NBTE is a possible diagnosis. An underlying disease has to be excluded. In our case two underlying diseases that could contribute to the development of NTBE were concurrently present. We cannot exclude the possibility that giant cell arteritis was also a paraneoplastic manifestation. However, treatment with antibiotics was completed.

ISCVID Poster 60

ANTIBODY RESPONSE TO SURFACE COMPONENTS IN PATIENTS WITH STAPHYLOCOCCUS AUREUS ENDOCARDITIS.

Simonetta Rindi1, Stefania Cicalini2, Giampiero Pietrocola1, Mario Venditti3, Marco Falcone3, Anna Festa2, Nicola Petrosillo2 and Pietro Speziale1.

1Department of Biochemistry, University of Pavia, Italy, 2Istituto Nazionale per le Malattie Infettive "L. Spallanzani", Rome, Italy., 3Università "La Sapienza", Rome, Italy.

Background
Adherence to host tissues is the first step in the pathogenesis of most bacterial infections, including endocarditis. Staphylococcus aureus expresses surface adhesins, which recognize extracellular matrix (ECM) proteins, including clumping factor A and B (ClfA, ClfB), fibronectin-binding protein A (FnbpA), collagen-binding protein (CNA) and MHC class II analogous protein (MAP). We examined the antibody reactivity to S. aureus adhesins in blood samples from patients with endocarditis caused by S. aureus.

Methods
Sera and blood culture isolates from 20 patients with S. aureus endocarditis were collected. The reactivity of immunoglobulin G (IgG) isolated from sera of patients to staphylococcal adhesins were measured by enzyme-linked immunosorbent assay (ELISA) and compared with the sera antibody levels of healthy adults. An ELISA reading of more than twice the mean of the controls was considered a response

Results
Almost all patients exhibited an antibody response to MAP and FnbpA. High IgG reactivity to ClfB was observed in 12/20 patients and to ClfA in 8/20 patients. Only 4 patients responded positively to CNA. Almost all the S. aureus isolates showed a high expression of ClfA, ClfB and FnbpA, whereas CNA-positive strains were isolated only from 4 patients. IgG preparation weakly inhibited fibronectin binding to FnbpA or to bacteria, whereas IgG from high titer sera significantly interfered with bacterial adherence to fibrinogen or collagen.

Conclusion
An in vivo production of bacterial adhesins during staphylococcal endocarditis was observed suggesting a possible diagnostic role of anti-adhesin antibodies in staphylococcal endocarditis.

ISCVID Poster 61

TRENDS IN ANTIMICROBIAL SUSCEPTIBILITIES OF ENTEROCOCCI ISOLATED IN PATIENTS WITH INFECTIVE ENDOCARDITIS (IE) IN BARCELONA (SPAIN) FROM 1990 TO 2004 AND IN VITRO ACTIVITY OF DOUBLE-BETALACTAM COMBINATIONS.

Marco F, García de la Mària C, Armero Y, Amat E, Almela M, Moreno A, Claramonte X, Manzardo C, Pérez N, Mestres CA, Gatell JM, Jiménez de Anta MT, Miró JM and the Hospital Endocarditis Study Group. Hospital Clínic. IDIBAPS. University of Barcelona. Spain.

Background
To know the current pattern of resistance to different antibiotics in enterococci isolated in patients with endocarditis in our institution from 1990 to 2004.

Methods
43 consecutive enterococci strains were included in the study. Antimicrobial agents tested were: penicillin, ampicillin, vancomycin, teicoplanin, linezolid and levofloxacin. MICs were determined following the NCCLS recommendations. High-level resistance to gentamicin and streptomycin was also studied. The combination of ampicillin plus ceftriaxone or cefotaxime was investigated by time-killing curves and the checkerboard method in strains that expressed or not high-level resistance to gentamicin and streptomycin (six E. faecalis and one E. durans)

Results
The species identified were: E. faecalis (93%), E. durans (5%), E. faecium (2%). MICs 50/90 (mcg/mL) were: penicillin (2/8), ampicillin (0.5/4), vancomycin (2/4), teicoplanin (<1/<1), linezolid (2/2), levofloxacin (2/>4). All isolates were susceptible to penicillin, ampicillin, vancomycin, teicoplanin and linezoliz. High-level resistance to gentamicin and streptomycin was detected in 8 (19%) and 14 (33%) isolates, respectively. 12 strains (28%) presented resistance to LV. Both combinations tested, ampicillin plus ceftriaxone or cefotaxime showed synergistic activity by the checkerboard method and bactericidal effect in the time-killing curves in all tested strains.

Conclusion
All enterococci were susceptible to penicillin. High-level resistance to either gentamicin or streptomycin were detected 35% of the isolates. Double-betalactam combinations was synergistic for enterococci with high-level resistance to aminoglicosides as well as for strains without it and could be a therapeutic alternative for selected patients who can not be treated with the classical regimen (penicillin plus aminoglicoside).

ISCVID Poster 62

CUMULATIVE BACTEREMIA REVISITED

Graham Roberts and Victoria Lucas

Univerisity College Hospital London

Background
The importance of 'everyday' bacteraemia as a possible cause of infective endocarditis (IE) was first proposed by Guntheroth in 1984. Subsequently the concept has been extended and standardised for all dento-gingival manipulative procedures on a time scale of one year (Roberts 1999). Further data has become available thus indicating the need for an update

Methods
Published articles were perused and the following data was extracted.

P = Prevalence: the percentage positive prevalence bacteraemia.
I = Intensity: the intensity of bacteraemia.
D1 = Duration 1: The estimated length of bacteraemia following the procedure.
D2 = Duration 2: The estimated time of the dental procedure (Leport 1985).
T = The estimated number of dental procedures in a 1 year period (Al Karaawi 2001).

The Cumulative Exposure Index was calculated by multiplying
P x I x D1 x D2 x T = Cumulative Exposure (CE) and transforming this into CEI by dividing the CE for a single extraction into the CE for each of the procedures.

Results
Examples are :
Single extraction CEI = 1.0
Multiple extractions CEI = 889.1
Toothbrushing [manual brush] CEI = 9,571.4
Toothbrushing [electric powered brush] CEI = 17,498.1

Further data will be given for the following procedures : everday activity, dental examination, professional cleaning, anaesthetics, conservation, orthodontics, surgery, and multiple treatments.

Conclusion
The CEI of 'everyday' procedures compared to the CEI following dental procedures suggests that bacteria enter the blood at times when antibiotic prophylaxis cannot be used. This has implications for prophylaixis of infective endocarditis.
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ISCVID Poster 63

CASE CLUSTERING IN INFECTIVE ENDOCARDITIS: THE ROLE OF AVAILABILITY BIAS

Jacob Strahilevitz and Ethan Rubinstein

Sheba Medical Center, Tel-Hashomer, Sackler School of Medicine, Tel-Aviv University, Israel

Background
Limited data exist on the impact of variation in clinical practice on the diagnosis of infective endocarditis (IE). We encountered in a prospective cohort study unexpected clustering of IE diagnosis. The aim of this study was to study the epidemiology of IE in our medical center, and evaluate causes of the clustering phenomenon.

Methods
Prospective observational cohort study within the framework of the International Collaboration on Endocarditis.

Results
51 patients were diagnosed with IE during the 22 months study period, with an incidence of 1.4/1000 admissions to the Internal Medicine wards. The characteristics of the patients were similar to that reported in other similar urban centers. We found clustering of IE cases in two out of six wards (runs-test, p= 0.02). Transesophageal echocardiography examinations for suspected IE were performed more frequently following a diagnosis of IE (p = 0.03, Fisher's exact test), and were associated with a cluster of IE cases.

Conclusion
We observed clustering of IE cases. The explanation for the clustering effect of IE cases may be due to availability bias, which finally affects the probability of diagnosis. Availability bias may contribute to differences in IE incidence between centers.

ISCVID Poster 64

EVALUATION OF BACTERICIDAL ACTIVITY OF DAPTOMYCIN AND VANCOMYCIN TESTED AGAINST STAPHYLOCOCCUS AUREUS (VISA, HVISA, AND WILD-TYPES)

HS Sader, T.R. Fritsche, RN Jones

JMI Laboratories

Background
Daptomycin, a cyclic lipopeptide, was recently released for clinical treatment of serious Gram-positive infections in hospitalized patients.

Methods
105 S. aureus with decreased susceptibility to vancomycin (88 heterogeneous [h] vancomycin-intermediate S. aureus [VISA] and 17 VISA) and 105 wild-type methicillin-resistant S. aureus (WT-MRSA) with vancomycin MIC <= 2 mcg/ml were susceptibility tested by reference methods against daptomycin and vancomycin. The lowest concentration of antimicrobial that killed >99.9% of the initial inoculum was defined as the MBC. Tolerance was defined as a MBC/MIC ratio >16.

Results
All MRSA-WT and hVISA strains were inhibited by <= 1 mcg/ml of daptomycin, while the VISA strains showed slightly higher daptomycin MICs (range, 0.5 – 4 mcg/ml). The highest daptomycin MBC observed was only 4 mcg/ml (3 isolates) and 93.3% of isolates showed daptomycin MBC <= 1 mcg/ml. Among the MRSA-WT, hVISA and VISA groups, only 68.6, 19.3 and 5.8% respectively showed vancomycin MBC results <= 4 mcg/ml. Fourteen (13.3%), 61 (69.3%), and 16 (94.2%) strains showed vancomycin MBC result >= 32 mcg/ml among the MRSA-WT, hVISA, and VISA groups, respectively. Daptomycin MBC/MIC ratios were not significantly affected by vancomycin susceptibility. All daptomycin MBC results were at or only 2-fold greater than the MIC. Conversely, 17.1% of contemporary WT-MRSA strains, 69.3% of hVISA and all of VISA strains showed a vancomycin MBC/MIC ratio consistent with tolerance.

Conclusion
Daptomycin was highly bactericidal against S. aureus, including VISA and hVISA strains. Vancomycin showed only bacteriostatic activity against the vast majority of VISA and hVISA, and 17% of WT-MRSA exhibited tolerance.

ISCVID Poster 65

A REVIEW OF RISK FACTORS FOR MORTALITY IN PATIENTS WITH INFECTIVE ENDOCARDITIS

Sandoe J, Mawer D and Baig W

Department of Microbiolgy and Department of Cardiology, The General Infirmary at Leeds, UK

Background
Despite advances in the management of infective endocarditis (IE), mortality associated with the disease remains significant. Previous studies have attempted to define factors associated with an adverse prognosis, apparently with conflicting results. We reviewed the evidence supporting these different risk factors, aiming to identify aspects of care that could be targeted to improve clinical outcome.

Methods
A literature search was performed using Medline and the following terms: infective, bacterial, endocarditis, risk factor, predictor, mortality. Only papers using multivariate analysis based on an unselected sample were included. Data relating to diagnostic criteria, population characteristics, overall mortality and risk factors were extracted and compared to identify common trends.

Results
18 papers were identified, 13 met the inclusion criteria. The majority were retrospective analyses from tertiary centres. Factors associated with mortality could be divided into 4 categories: 1. premorbid status (~39% of papers), 2. physiological condition at presentation (~85%), 3. specifics of the infection (~77%), and 4. treatment (~15%). There was greatest agreement for categories 2 and 3. Commonest overall predictors of mortality were Staphylococcus aureus infection and increasing age (both ~30% of papers).

Conclusion
Despite diversity in study methodology, a patient's premorbid condition, clinical status at presentation, and the causative pathogen are consistently shown to impact on the outcome of IE. Heightening awareness of the disease among medical practitioners to whom a patient with the disease first presents may lead to an earlier diagnosis. This, combined with aggressive optimization of acute physiology, might improve mortality in IE.

ISCVID Poster 66

STREPTOCOCCUS VIRIDANS ENDOCARDITIS IN A TERTIARY SURGICAL UNIT

Santos,M; Ferraiouli,G.I..; Magalhães, C.K., Weksler,C.,Brito O., Soares,M.G.G.; Cardao,F.L.; Gonçalves,A.A.V.G.

instituto nacional de cardiologia laranjeiras

Background
Streptococcus viridans group(SV)usually were associated with lower risk of complications and surgery. The high prevalence of chronic rheumatic heart disease in Brazil configures some differences in patient's profile.

Methods
Retrospective cohort conducted from May 1997 to December 2004 at Laranjeiras Institute, among patients who experienced endocarditis and fulfilled the Duke's endocarditis criteria (definitive or possible)

Results
The patients were divided into SV (n =22) and OA (n = 52). A total of 74 patients were included (23% SV). The mean age was 34 in SV X 42 years in OA (p= 0.0218). There was no difference on mean perfusion time (113 X 112 minutes p>0,05) or sex. 24,5% in SV group were submitted to surgery versus 75,5% in OA group(p<0,01). Cardiac surgery was indicated in SV by mechanic problems (valvular dysfunction 8 cases, valvular ruptured 3, acute leaflet of mitral valve 1) and uncontrollable infections (3 cases). The proportion of uncontrollable infections, definitive Duke criteria, infectious and non-infectious complications was similar in both groups. The proportion of aortic endocarditis was 41% in SV and 18% in OA (p=0, 03). Central nervous system lesions and hemorrhagic complications were more frequent in SV and rhythm disorders in AO (14% X 0%). Only one nosocomial SV endocarditis were found.

Conclusion
A lower prevalence of SV endocarditis than in literature may be related to the great number of patients referred from another units, nosocomial cases (15% of total) and previous antibiotic use. The SV patients had less surgery indication, usually done because previous rheumatic valvular disease.

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ENDOCARDIAL INFECTION: PROFILE 2004

Cynthia K Magalhães,Fernanda B Sampaio,Wagner A Alves,Clara Weksler,Marisa Santos,Giovana Ferraiouli,Oscar Brito.

inst nacional de cardiologia laranjeiras

Background
to assess the clinical profile of Infective Endocarditis (IE) patients treated at a surgical reference heart center in 2004

Methods
Prospective cohort enrolling patients serially admitted with a definitive diagnosis of IE according to the Duke Criteria between January and December 2004. RESULTS: 21 patients reviewed 12 males. Mean age 41.8 (21 to 70). Average hospital stay: 55.6 days. .

Results
The most prevalent symptom at onset was fever (12 patients). Rheumatic heart disease was the most common predisposing cardiac factor found (33.3 %), followed by mitral valve prolapse and degeneration (23.8 %), congenital heart disease (19 %), and valve prosthesis (14.3%.). No patient had any prior history of IE. In 10 cases (47.6%) bacteremia inducing procedures were identified. 13 patients were in functional class III or IV (NYHA) on admission. Blood samples were positive in 14 patients (66.7 %) and the most prevalent germs were Gram-negative bacilli and Streptococcus viridans. Ten patients (47.6%) showed single vegetation and 3 (14.3%) had over 3 vegetations identified by echocardiogram. The most frequent vegetation location was the mitral valve (71.4 %). All patients had in-hospital complications, most often of a mechanical nature. Likewise, all patients were referred to surgery. The most common procedure was placement of a metal mitral prosthesis (10 patients). Mean perfusion time and assisted ventilation were respectively 101.2 and 89.5 minutes. In-hospital mortality was 14.3% consistent with the literature: 11 to 35% (Croft.1983) . Average numbers of transthoracic and transesophageal echocardiograms per patient were respectively 2.2 and 3.3. 18 patients underwent preoperative abdominal ultrasound exams and 9 showed abnormalities. Pre- and postoperative complication rates were 15% and 70%, respectively. Preoperative echocardiogram findings were consistent with surgical findings in 85% of cases, and surgical findings concurred with pathological findings in 80% of cases.

Conclusion
The patient clinical profiles indicate a high risk population, high prevalence of surgical indication, and high complexity due in part to the nature of the institution (a referral hospital for heart surgery). Despite all diagnostic and therapeutic advances, IE still entails high morbidity/mortality rates.

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SURGICAL VERSUS MEDICAL TREATMENT IN PROSTHETIC VALVE ENDOCARDITIS: SINGLE-CENTER EXPERIENCE OVER 11 YEARS

Christine Selton-Suty, Thanh Doco-Lecompte, François Alla, Christine Lion, Rémi Tanazak, Thierry May, Yves Juillière, Jean-Pierre Carteaux, Bruno Hoen

CHU Nancy-Brabois, France

Background
Surgical removal of any infected implanted device is usually recommended; however, many factors challenge this paradigm in the case of prosthetic valve endocarditis (PVE).

Methods
We compared the results of medical versus surgical therapy among patients with PVE treated in our University Hospital between 1991 and 2002.

Results
Among 358 pts with IE, 74 had PVE (21%, 42 male/32 female, mean age 63.5 ± 12.0 yrs, 29 bioprosthesis, mean time between valve insertion and IE 6.7±6.1 yrs). Twenty-six patients underwent valve replacement during the course of antibiotic therapy (35%, gr 1: 20 M/6F, 61±12 yrs) while 48 received antibiotics alone (gr 2, 22M/26F, 65±12 yrs, p=0.05 for gender) Gr1 patients more often had heart failure (81% vs. 34%, p=0.001), vegetation larger than 10 mm at echo (12/14 vs. 5/20%, p=0.001), abscesses (38% vs. 6%, p=0.001), prosthetic dehiscence (54% vs. 17%, p=0.001) and significant regurgitation (69 vs. 19%, p=0.0005). There was no significant difference for micro-organisms (Staphylococci: 50% vs. 23%; streptococci: 31% vs. 46%; other microrganisms: 11% vs. 17%; negative blood culture IE: 8% vs. 15%) between the 2 groups (p=0.13). Length of stay was longer in gr 1 than in gr 2 (78±65 vs. 50±37 days, p=0.02). Global mortality was 24% (36% in gr 1 vs. 19% in gr 2, ns).

Conclusion
Although surgery obviously may save lives in patients with complicated PVE, this retrospective study shows that a significant proportion of patients with PVE may be cured with antibiotic treatment alone.

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STREPTOCOCCUS SANGUIS VIRULENCE DETERMINANTS FOR ENDOCARDITIS IDENTIFIED BY SIGNATURE-TAGGED MUTAGENESIS

Lauren Senty, Sehmi Paik, Sankar Das, Cindy L. Munro, and Todd Kitten

Virginia Commonwealth University

Background
Streptococcus sanguis is one of the most common agents of infective endocarditis. In this study, signature-tagged mutagenesis (STM) was employed to identify virulence determinants important for vegetation colonization. Such determinants may represent new targets for antibiotics or vaccines.

Methods
STM was used to create 800 random S. sanguis mutants. Mutants were subjected to in vivo screening by STM and competitive index assays. The anaerobic ribonucleotide reductase (ARTR) gene, which was identified as a virulence determinant in one STM mutant, was further characterized by creating an ARTR in-frame deletion. In addition, two plasmids containing the ARTR gene were tested for complementation of anaerobic growth in soft agar oxygen gradient assays.

Results
Comparisons of STM mutant pools led to identification of five mutants with avirulent phenotypes. Molecular analysis of these mutants identified genes encoding undecaprenol kinase, homoserine kinase, ARTR, adenylosuccinate lyase, and a hypothetical protein. All mutants grew comparably to SK36 in aerobic broth culture, except for the homoserine kinase mutant. Growth of this mutant was restored by the addition of threonine to the medium. In soft agar oxygen gradient studies, ARTR mutants showed growth restricted to oxidized portions of agar, in comparison to parent strain SK36. Attempts to complement these mutants with two ARTR constructs have identified an extended ARTR promoter region.

Conclusion
STM results suggest that housekeeping functions such as cell wall synthesis, amino acid and nucleic acid synthesis, and the ability to survive under anaerobic conditions are important virulence factors in S. sanguis endocarditis.

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INFECTIOUS ENDOCARDITIS (IE) – THE EPIDEMIC OF THE NEW MILLENNIUM

Y. Siegman-Igra, B. Koifman, D. Porat Ben-Amy, R. Porat, M. Giladi.

Tel-Aviv University / Tel-Aviv Sourasky Medical Center

Background
In spite of a dramatic decrease in the incidence of rheumatic heart disease, the frequency of IE has not decreased over the past decades, mainly due to emerging and changing risk factors. The purpose of this study was to examine the change in epidemiologic features of IE in our medical center during recent years.

Methods
All cases of culture positive IE (diagnosed according to the modified Duke criteria) from 2003-4 (2 years, 88 episodes in 86 patients) were evaluated and compared to all cases from 1995-8 (4 years, 87 episodes in 84 patients).

Results
The incidence of IE episodes increased from 5.0/10,000 admissions to 8.1/10,000 in the absence of a significant change in the size of the population served. Presence of prosthetic valves and/or pacemaker electrodes as the predisposing conditions increased from 28% (24/87) to 45% (40/88), P<0.03. The types of micro-organisms did not change significantly, however, enterococci constituted 27% of cases in both periods, a substantially higher proportion than reported in recent literature (highest figure – 17%). Close to 50% of the episodes were healthcare-facility associated, in both periods. In-hospital mortality remained unchanged, 23%.

Conclusion
The incidence of IE has significantly increased and the epidemiological risk factors have changed. Prosthetic valves and/or pacemaker electrodes are becoming more prominent factors, and a larger proportion of cases are associated with hospital acquisition. Enterococci seem to have a bigger role as IE pathogens than previously appreciated.

ISCVID Poster 71

CEREBRAL COMPLICATIONS IN INFECTIVE ENDOCARDITIS. A RISK FACTOR ANALYSIS FROM ONE URBAN AREA IN SWEDEN.

Snygg-Martin U, Andersson R, Olaison L

Sahlgrenska University Hospital, Göteborg, Sweden

Background
A cerebral complication is reported in 15-40% of cases of infective endocarditis (IE). The relative importance of different risk factors and the influence of ASA/anticoagulant therapy is still a matter of debate.

Methods
From 1996 through 2002, 160 cases of left-sided definite IE without referrals treated at one institution were prospectively enrolled in the study. Cases with cerebral complications were analyzed concerning risk factors, ASA/anticoagulant therapy and outcome.

Results
The median age was 69 years; 34% were female. On admittance 42 % were treated with ASA or coumadin/warfarin (33 coumadin/warfarin, 29 ASA, 5 heparin derivates), 20% had atrial fibrillation, 26% had PVE. Microbial etiology were viridans streptococci (32%), S aureus (26%), enterococci (14%), and coagulase-negative staphylococci (6%). Vegetations ≥10 mm were detected in 37 %, <10 mm in 29%. Mortality rate was 9%. Cerebral complications occurred in 26% (29 ischemic infarctions, 3 hemorrhagic infarctions, 8 TIA, 2 ruptured mycotic aneurysms and 8 meningitis). Cerebral bleeding occured in 5 episodes, only one had coumadin/warfarin and none ASA therapy. S aureus IE had cerebral complications in 50%, alpha-streptococci in 20%, enterococci in 7 % (p<0.01). Cerebral complications in patients with vegetation ≥10 mm, vegetation < 10 mm and no vegetations were 39%,19% and 17 % respectively (p<0.CC05). There was no correlation between rate of cerebral complications and age, valve involvement, atrial fibrillation, ASA/anticoagulant therapy or in-hospital mortality.Cerebral complications in this study were associated with S aureus etiology and vegetation size ≥10 mm. No association was found with ASA/anticoagulant therapy.

Conclusion
Cerebral complications in this study were associated with S aureus etiology and vegetation size ≥10 mm. No association was found with ASA/anticoagulant therapy.

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IMMUNE AUGMENTATION FOR PULMONARY INFECTION AFTER VALVE SURGERY

J. Scott Rankin, Daniel C. Johnson, Donald D. Glower, MD, Tracey L. Teichmann, Lawrence H. Muhlbaier, and Charles W. Stratton

University / Hospital Affiliation: Vanderbilt University

Background
Pneumonia/multiorgan failure (P/MF) is a primary cause of mortality/morbidity after endocarditis surgery, possibly due to the immunosuppressive effects of systemic infection, nutritional depletion, cardiopulmonary bypass, and postoperative bleeding. This study evaluated the safety and efficacy of immunotherapy in postoperative patients experiencing P/MF.

Methods
In 10 patients developing P/MF, intravenous immunoglobulin (IVIgG) was administered at 24gm/d for 5 days. Procedures were valve/coronary (5), multiple valve (4), and aortic root replacement (1). Etiology was endocarditis (1), ischemic MR (2), calcific (1), rheumatic (1), and prolapse (5). Median age was 69 years. Preoperatively, 90% had comorbidity, 70% presented acutely, 50% were hypo-albuminemic, and 40% had antecedent acute pulmonary derangement. Variables were assessed for 3 days prior (-3) to beginning IVIgG (Day 0) and for 5 days afterward (+5). A postoperative morbidity index (PMI) was generated as the sum of: worsening lung infiltrates (I); leukocytosis (L); pulmonary dysfunction (P); ventilator requirement (V); septic shock (S); renal (R), GI (G), or hepatic (H) dysfunction; thrombocytopenia (T); and delirium (D).

Results
At Day 0, all patients were refractory to antibiotics with morbidity of: I-100%, L-90%, P-90%, V-60%, S-30%, R-70%, G-40%, H-20%, T-30%, and D-20%. IVIgG administration was associated with a decrement in WBC and improvement in PMI ($p<0.006$) (Figure). 9/10 patients recovered uneventfully, and one died (7%) from sepsis. No complications of IVIgG occurred.

Conclusion
Given the 50-75% predicted mortality of P/MF after valve surgery, these data suggest that IVIgG is a safe and efficacious adjunct to antibiotics. Further studies, including a randomized trial, seem indicated.

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HOMOGRAFT IN THE TREATMENT OF NATIVE OR PROSTHETIC AORTIC VALVE ENDOCARDITIS

Suter F, Rizzi M, Ravasio V, Terzi A*, Ferrazzi P*, Gamba A*

*Divisions of Infectious Diseases and *Cardiosurgery . Ospedali Riuniti. Bergamo - Italy*

Background
Since 1992 we developed a simple and efficient "Homograft Bank" with valves harvested from cardiac transplanted patients or from multiorgan donors. The aim of this study was to evaluate the results of the surgical treatment of native (NVE) or prosthetic (PVE) aortic valve endocarditis using homografts.

Methods
From 1992 through 2004, 64 patients with aortic valve endocarditis underwent surgery; 42 infections occurred on native valve and 22 cases on prosthetic valve; 23 patients presented annular abscesses. In the two groups of patients (with NVE or PVE) 39% and 50% respectively was NYHA class IV or V and left ventricle EF was <40% in 14% and 27%. All patients underwent aortic valve replacement with homograft; aortic root was replaced in 9 cases.

Results
Among patients with NVE there were 7 late deaths (mean follow-up 32±27 months). Recurrent endocarditis was observed in 2 patients, which underwent 3 early reoperations (recurrent infection caused by Candida and Myceliophthora thermophila); 2 patients underwent reoperation for late recurrence; after surgery 35 patients were in NYHA class I or II, with a mean follow-up of 87±30 months.
Among patients with PVE we observed 1 early and 4 late deaths (not strictly related to the infection) and 3 cases of late recurrent endocarditis (which resulted in 1 death and 2 reoperation); after surgery 16 patients were in NYHA class I or II (with a mean follow-up of 72±41 months).

Conclusion
In case of PVE or NVE, particularly in the presence of extensive annular abscesses, homograft valve could be considered the device of choice for its good functional results and low early recurrence of valve infection.
Our "Homograft Bank" resulted to be very useful, safe and cost-effective.

ISCVID Poster 74

DIAGNOSIS OF PORTALS OF ENTRY IN PATIENTS WITH INFECTIVE ENDOCARDITIS. THE YIELD OF STOMATOLOGY CONSULTATION AND COLONOSCOPY.

Flicoteaux R, Roussel M, De Mello G, Arvieux C, Thomas R, Michelet C, Tattevin P.

Rennes University Hospital, France

Background
The diagnosis and treatment of portals of entry (PE) are clearly recommended in the care of patients with infective endocarditis (IE) as a key component of secondary prevention. Few studies have evaluated the yield of colonoscopy and stomatology consultation in this setting.

Methods
Retrospective study of patients hospitalized for documented IE (Duke criteria) in one department from January, 2003 to July, 2004. Data were extracted from patients medical chart and from a computerised search in the stomatology department database.

Results
63 patients (46 men, mean age 67 years) were studied. Main causative microorganisms were: streptococci, 41% (oral, 19%; group D, 13%; pyogenic, 7%) ; staphylococci, 37% ; enterococci, 10%. Intra-hospital mortality was 22%. Of the 12 patients with oral streptococcus IE, 10 underwent orthopantogram and stomatology consultation, which allowed to diagnose and treat an infectious focus in 8 patients ; 22% of patients with non streptococcal IE underwent stomatology consultation. A colonoscopy was performed for 16 patients (33%) including all surviving patients with enterococcus or group D streptococcus IE, and allowed the identification of PE in 9 patients (56%).

Conclusion
Systematic investigations have a high yield for the diagnosis of PE in patients with : i) enterococcus or group D streptococcus IE (colonoscopy) and ii) oral streptococcus IE (stomatology consultation). The rate of patients with non streptococcal IE who undergo stomatology consultation have to be improved as a key component of the screening for any infectious focus in these patients at high risk of subsequent IE.

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AMOXICILLIN PLASMA CONCENTRATIONS ARE CLOSELY CORRELATED TO DOSES IN PATIENTS WITH MODERATE OR SEVERE RENAL FAILURE BUT NOT IN PATIENTS WITH NORMAL RENAL FUNCTION.

Salomon S, Tribut O, Le Tulzo Y, Arvieux C, Thomas R, Michelet C, Tattevin P.

Rennes University Hospital, France

Background
Most infective endocarditis (IE) are treated with high doses of betalactam. Little is known about the relation between doses and concentration in patients with normal or impaired renal function. For amoxicillin, guidelines recommend doses reduction only when creatinine clearance (CrCl) is less than 30 mL/mn.

Methods
Retrospective study of patients for whom amoxicillin trough plasma concentrations were determined by chromatography between March, 2003 and April, 2004 in our department. Plasma CrCl was estimated according to Cockroft and Gault prediction rule. Amoxicillin doses varied according to clinical situations and CrCl. It had to be stable for more than 5 half-lives (24 h if CrCl > 30 mL/mn and 48 h if CrCl < 30 mL/mn) to be included. We studied the correlation between amoxicillin doses and trough plasma concentration in 3 groups of patients : i) normal renal function (CrCl > 60 mL/mn), ii) moderate renal failure (CrCl between 60 and 30 mL/mn), iii) severe renal failure (CrCl < 30 mL/mn).

Results

	CrCl > 60 mL/mn	60 ≥ CrCl ≥ 30 mL/mn	CrCl < 30 mL/mn
Number of measures	n=18	n=12	n=8
Mean amoxicillin dose	143 mg/kg/day	103 mg/kg/day	93 mg/kg/day
Mean concentration (cc)	45 mg/L	83 mg/L	105 mg/L
Correlation cc/doses	r^2=0.064	r^2=0.5685	r^2=0.8417

Conclusion
Unexpectedly, amoxicillin concentrations correlate to doses only in patients with moderate or severe renal failure. Despite significant doses reduction, amoxicillin trough plasma concentrations are much higher in this population. Amoxicillin doses should be reduced even in patients with moderate renal failure.

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RISKS FOR INFECTIVE ENDOCARDITIS (IE) IN THE ELDERLY: LESSONS FROM THE INTERNATIONAL COLLABORATION ON ENDOCARDITIS PROSPECTIVE COHORT STUDY (ICE-PCS).

Utili R, Bradley S, Tripodi M-F, Durante Mangoni E, Bouza E, Moreno A, Pappas P, Barsic B, Francis CK, Ramos R, van der Meer JT, Tattevin P, Murdoch D, Fowler V, Abrutyn E, Miro JM, Sexton DJ, Cabell C, for the ICE Investigators.

Second University of Naples, Ospedale Monaldi, Napoli, Italy

Background
It is assumed that IE is more common in older adults, however no data regarding risk factors for IE are available from large prospective studies.

Methods
To delineate risk factors for IE in aged individuals we analyzed data from 1779 consecutive IE cases prospectively enrolled in the ICE-PCS. Patients >64 (n=689) were compared with patients <65. Data were analyzed by Wilcoxon or chi-square tests.

Results
Compared to younger patients, older IE patients were more often female (p<.002) and European (p<.0001). IE in older patients were more likely to be of nosocomial origin and to be associated with invasive procedures (p<.0001). Risk factors such as gastrointestinal and genitourinary neoplasm, diabetes, steroid use, presence of intra-cardiac prosthetic devices were more frequent in patients >64 p<0.001 for all comparisons). Moderate to severe non-rheumatogenic mitral regurgitation and aortic stenosis was also more common in older patients (p<.0001). Bacteremia due to coagulase-negative staphylococci, enterococci and Streptococcus bovis, were more frequent in older patients. Gastrointestinal and genitourinary sources were presumed to be the most common causes of infection; Enterococci were also commonly isolated from sources other than blood, such as the urine. A higher mortality was observed in older patients (26% vs 12%, respectively; p<.0001).

Conclusion
Risk factors for IE in elderly patients include diabetes, neoplasms of the gastrointestinal and genitourinary tracts, intracardiac devices and invasive procedures. Further studies are needed to determine if selected use of prophylatic antibiotics prior to invasive procedures could reduce the incidence of IE in elderly patients.

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MULTIVALVE INVOLVEMENT IN INFECTIVE ENDOCARDITIS (IE) IN THE INTERNATIONAL COLLABORATION ON ENDOCARDITIS (ICE) PROSPECTIVE COHORT STUDY (ICE-PCS)

Tripodi M-F, Utili R, Durante Mangoni E, Cabell C, Pappas P, Kanj SS, Naber C, Kanafani Z, Pachirat O, Kumar AS, Abrutyn E, Rubinstein E, Miro JM, Sexton D, Fowler V, for the ICE Investigators

Second University of Naples, Napoli, Italy

Background
Multivalve endocarditis (MVE) is commonly considered a severe condition, but prospective data on incidence, complications and outcome are lacking.

Methods
We compared the characteristics of MVE versus non-MVE (NMVE) with respect to determinants, clinical characteristics, etiology, echo findings, need for surgery and outcome. We studied 1779 ICE-PCS patients enrolled since 2000. Data were analyzed by Wilcoxon two-sample test for continuous variables and chi-square test for categorical variables.

Results
Among 1779 patients, MVE was identified in 163 (9.6%). Patients with MVE were similar to those with NMVE with respect to sex, age, comorbidities, and predisposing factors.
MVE occurred less frequently on prosthetic valves than NMVE (p<0.001). St. bovis was the only organism significantly associated with MVE (11.8% vs 5.9% in NMVE; p<0.05). About 25% of MVE showed both right and left side involvement. MVE had an higher prevalence of cardiac complications, such as new regurgitation (p<0.001), intracardiac vegetations (p<0.001) and valve perforation (p<0.05), which led more frequently to early surgery (55.8% vs 46.5% in NMVE; p<0.05). Compared to NMVE, outcome was complicated by an higher incidence of heart failure (p<0.001), intracardiac abscess (p<0.05), systemic embolization (p<0.001) and new conduction abnormalities (p<0.01). The death rate was 22.1% in MVE and 16.5% in NMVE (p=0.067).

Conclusion
Although not frequent, MVE is a severe form of IE. It is characterized by a higher incidence of embolism and heart failure, and there is a trend for a higher mortality rate. An early surgical approach is more frequently utilized in MVE.

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GENOTYPIC AND PHENOTYPIC CHARACTERIZATION OF STREPTOCOCCUS BOVIS STRAINS RESPONSIBLE FOR ENDOCARDITIS.

Tripodi M-F, Zarrilli R, Fortunato R, Ragone E, Durante Mangoni E, Ruggiero G, Utili R.

Second University of Naples, Napoli, Italy

Background
Streptococcus bovis is increasingly recognized as a cause of infective endocarditis and has been associated with underlying gastrointestinal disease. We evaluated the molecular epidemiology of S. bovis isolates responsible for endocarditis in Italian patients from 1990 to 2003.

Methods
S. bovis strains were classified on the basis of biochemical profiles (API 20 Strep), antimicrobial susceptibilities and genotypes (PFGE analysis).

Results
25 strains were studied, 20 S. bovis I and 5 S. bovis II. Seven biochemical profiles were identified. PFGE analysis identified 22 profiles that differed in migration of at least two DNA fragments and showed a similarity of < 87%. The majority of PFGE patterns were single isolates and differed for their antimicrobial susceptibility. Only in 3 cases we found 2 strains with identical PFGE type (100% similarity) and antibiotype isolated from two different patients 1, 6 and 15 months apart, respectively. Dendrogram analysis grouped S. bovis I and II strains in two distinct genetic clusters (I and II) with a similarity coefficient of 38%. Also, two subclusters (Ia and Ib) with a similarity coefficient of 47% included 17 S. bovis I strains, that showed similar biochemical profiles (biotype A and B in 15 and 2 of the isolates, respectively), but different resistance phenotypes.

Conclusion
Diversity of isolates excludes the selection of epidemic clones. Sporadic clones may have been selected from the endogenous intestinal microflora. Whether these clones share common genetic traits and might have a common origin requires further studies in strains isolated from different European countries.

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SHORT-COURSE GENTAMICIN IN COMBINATION WITH DAPTOMYCIN, VANCOMYCIN OR LINEZOLID AGAINST COMMUNITY-ASSOCIATED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (CA-MRSA) IN AN IN VITRO PHARMACODYNAMIC MODEL (IVPM) WITH SIMULATED ENDOCARDIAL VEGETATIONS (SEV)

Brian T. Tsuji, Michael J. Rybak and Glenn W. Kaatz

Anti-Infective Research Laboratory, Wayne State University

Background
We describe a case of right sided endocaritis due to PVL+ CA-MRSA and evaluate therapeutic options using an IVPM. On 08.04 a 30 year old male, IV drug user, presented with positive MRSA blood cultures (BC) & a 2 day history of fever, chills & hematuria. TEE confirmed IE & vancomycin & gentamicin was administered. On Day 5: Vegetations found on anterior tricuspid valve (TV); TV was replaced & all subsequent BC were negative. The activities of daptomycin, vancomycin & linezolid alone & in combination with a single, high dose of gentamicin were evaluated in an IVPM with SEV against this case isolate (CA-MRSA-IE).

Methods
SCCmec type, the presence of PVL & mecA gene determined by molecular methods. MICs & MBCs determined according to NCCLS in triplicate. An IVPM with SEV (initial inoculum of 9 log10 CFU/g) was used vs. CA-MRSA-IE & MW2. Simulated regimens: Vancomycin 1g q12h (VAN), Daptomycin 6mg/kg q24h (D6) & Linezolid 600 mg q12h (LZ) alone and in combination with a single dose of gentamicin 5mg/kg (G5x1). Simulations performed in triplicate & bacterial quantification occurred over 72h.

Results
Case isolate was PVL-positive, SCCmec IV & mecA-positive. MIC/MBC for DAP, VAN, LZ, GENT vs. CA-MRSA-IE: 0.25/0.25, 1/1, 2/32, 0.25/0.25; MW2: 0.25/0.25, 2/32, 2/2, 0.25/0.25. D6 alone resulted in rapid bactericidal activity by 32h. Vancomycin and linezolid did not achieve 99.9% kill at 72h endpoint. Adding G5x1 to vancomycin resulted in synergy and 99.9% kill; while adding G5x1 to linezolid did not achieve 99.9% kill or improve activity. Adding G5x1 to daptomycin improved time to 99.9% kill from 32h to 4h & resulted in synergy.

Conclusion
We describe the occurrence of PVL-positive, SCCmec IV CA-MRSA endocarditis. In an IVPM D6+G5x1>D6>V+G5x1>V=LZ=LZ+G5x1. CA-MRSA-IE is a therapeutic challenge & several alternatives appear promising.

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SHOULD ANTIMICROBIAL TREATMENT DURATION IN PATIENTS WITH LEFT-SIDED NATIVE VALVE ENDOCARDITIS BE PROLONGED BASED ON ELEVATED C-REACTIVE PROTEIN VALUES?

D.W.M. Verhagen, J. Hermanides, J.C. Korevaar, P.M.M. Bossuyt, R.B.A. van den Brink, P. Speelman, J.T.M. van der Meer

Academic Medical Centre, the Netherlands

Background
During a multicenter study among patients with left-sided native valve endocarditis (NVE) in the Netherlands it appeared to be common practice in 15 of 23 participating hospitals to continue antimicrobial treatment beyond standard duration if C-reactive protein (CRP) values had not normalized. We investigated whether this practice improved clinical outcome.

Methods
Prospective, multicentre study among adult patients with left-sided NVE in the Netherlands. Endocarditis was defined according to the Duke criteria. Duration of treatment, hospitalization and clinical outcome were compared between patients admitted in hospitals where treatment was prolonged based on elevated CRP at the end of standard treatment and patients admitted in hospitals where it was not.
Preliminary results of this study were presented during the ISCVID meeting in 2003.

Results
Sixty-one patients with left-sided NVE who did not undergo cardiac surgery had an elevated CRP value at the end of standard treatment. In 21 patients treatment was ended at this time (group A), while in 40 patients it was prolonged (group B). Median duration of treatment was 28 days (range 14-42) in group A and 42 days (31-104) in group B ($p<0.001$). Median duration of hospitalisation was 44 (15-129) and 45 (31-122) days, respectively (p 0.048). There were no relapses of infection in either group and there were two deaths in group B and none in group A (not statistically significant)

Conclusion
In patients with left-sided NVE extending antimicrobial treatment in case of elevated CRP at the end of standard treatment duration does not improve outcome.

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QUALITY OF LIFE AND POST TRAUMATIC STRESS DISORDER AMONG SURVIVORS OF LEFT-SIDED NATIVE VALVE ENDOCARDITIS

D.W.M. Verhagen, J. Hermanides, J.C. Korevaar, P.M.M. Bossuyt, R.B.A. van den Brink, P. Speelman, J.T.M. van der Meer

Academic Medical Centre, Amsterdam, the Netherlands

Background
Morbidity and mortality of infective endocarditis is still high despite considerable progress in medical management. Hardly anything is known about the long-term effects of events on health related quality of life in survivors of the disease.

Methods
Prospective follow-up study in the Netherlands among 88 survivors of left-sided native valve endocarditis. Questionnaires about medical symptoms and employment status were administered at 3 and 12 months after discharge. The SF-36 Health Related Quality of Life (HR-QoL) questionnaire and the Post-Traumatic Stress Disorder (PTSD) questionnaire were administered at 12 months after discharge.

Results
Medical symptoms and employment questionnaires were returned in 70 (80%) patients, PTSD questionnaires in 64 (73%) and HR-QoL questionnaires in 67 (76%) patients. Three months after discharge 52% of the patients still complained of fatigue and 53% of muscle weakness, after 12 months the percentages were 40% and 39%, respectively. Before the disease 75% of the patients younger than 60 years was employed. Three and 12 months after discharge this was 54% and 70%, respectively. Among those employed, median working hours per week was 40 before the disease, 24 hours at 3 months, and 31 hours at 12 months.
One year after discharge HR-QoL was impaired as compared to age-adjusted standard values in 6 of the 8 dimensions and a substantial proportion of patients (11%) suffered from post traumatic stress disorder.

Conclusion
A year after discharge, the majority of survivors of left-sided NVE is still suffering from persisting symptoms, diminished quality of life and/or post-traumatic stress disorder.

ISCVID Poster 82

PROGNOSTIC VALUE OF SERIAL C-REACTIVE PROTEIN MEASUREMENTS IN PATIENTS WITH LEFT-SIDED NATIVE VALVE ENDOCARDITIS

D.W.M. Verhagen, J. Hermanides, J.C. Korevaar, P.M.M. Bossuyt, R.B.A. van den Brink, P.Speelman, J.T.M. van der Meer

Academic Medical Centre, Amsterdam, the Netherlands

Background
C-reactive protein (CRP) is an acute phase protein, its concentration increases rapidly in response to infection.The aim of this study was to determine the value of serial CRP measurements as predictor of clinical outcome in patients with left-sided native valve endocarditis (NVE).

Methods
Prospective, multicenter study among adult patients with left-sided NVE in the Netherlands. Endocarditis was defined according to the Duke criteria. Follow up was 12 weeks after discharge. CRP values were determined at baseline and each Mo/Wed/Fri hereafter until the end of treatment. Poor outcome was defined as either death or serious infectious complications.

Results
123 patients were included. There were 46 (37%) patients with poor outcome. Patients were divided into quintiles based on CRP at baseline and after 1 and 2 weeks. After one week of treatment the Odds Ratio for poor outcome was 14,9 in the group with the highest CRP values compared to the group with lowest CRP values (reference group) ($p < 0.001$). Patients were then divided into quintiles based on percentual decline of CRP after one week of treatment in comparison to baseline. Odds Ratios of poor outcome in the group with least decline was 12,63 compared to the reference group (p 0,003). The area under the ROC curve for CRP to predict poor outcome was largest after one week of treatment: 0.704 (95% CI 0.601-0.808). Sensitivity and specificity for different CRP cut-off values at this time were low.

Conclusion
Higher CRP values and slow decline of CRP during antimicrobial treatment are an indication of poor outcome, especially during the first week of treatment. However, the clinical value of serial CRP values, in sense of sensitivity and specificity, is too small to be used as a solid prognostic indicator.

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THE USE AND OUTCOME OF SURGERY FOR PROSTHETIC VALVE ENDOCARDITIS: A PROPENSITY ANALYSIS OF THE INTERNATIONAL COLLABORATION ON ENDOCARDITIS (ICE) PROSPECTIVE DATABASE

Wang A, Cabell CH, Fowler Jr, VG, Anguera I, Spelman D, Selton-Suty C, Pappas P, Hoen B, Iarussi D, Tripodi M, Utili R, Watkins R, Suter F, Rizzi M, Braun S, Ramos A, Commerford P, Francis J, Sexton DJ, Corey GR

Duke University Medical Center, Durham NC

Background
Surgical therapy is commonly recommended for patients with prosthetic valve infective endocarditis (PVIE). However, the application and effect of surgery for PVIE has not been well defined, particularly with respect to differing characteristics of patients treated with surgery compared to those who receive medical therapy alone.

Methods
The International Collaboration on Endocarditis (ICE) Prospective Database was used to evaluate the application and outcome of surgery for PVIE. Clinical, microbiologic, and echocardiographic differences between PVIE patients treated with surgical therapy (in conjunction with medical therapy) and those treated with medical therapy alone were determined. Propensity scores were created based on those factors favoring the use of surgery for PVIE. Using these propensity scores, patients who underwent surgery were matched with patients treated with medical therapy alone. Logistic regression analysis was then performed to determine those factors predictive of in-hospital mortality.

Results
Definite PVIE by Duke criteria was present in 362 patients; surgical treatment was utilized in 188 (51.9%) and 174 (48.1%) patients were treated with medical therapy only. The in-hospital mortality rate was 21.3% for patients with surgery compared to 26.4% treated with medical therapy alone (p=0.237). Surgical treatment was predicted by younger age, duration since first manifestation of IE, culture-negative PVIE, radiographic evidence of pulmonary edema, and paravalvular complications. Patients with a history of hemodialysis or those with recent stroke were less likely to undergo surgery. Using a matched propensity sample of 198 patients with PVIE, in-hospital mortality was predicted by age, history of hemodialysis, new valvular regurgitation and persistently positive blood cultures (area under ROC=0.803) but not surgical treatment (OR 1.39, 95%CI 0.73-2.65).

Conclusion
Surgical treatment is performed in the majority of patients with definite PVIE. Factors associated with surgical treatment are characteristic of complicated IE, and the mortality with surgical treatment approximates that of uncomplicated IE treated with medical therapy alone. However, after adjustment for these factors, surgery is not an independent predictor of in-hospital survival. Longer term follow-up is necessary to better assess the outcome of these treatment strategies.

ISCVID Poster 84

Chlamydia pneumoniae infection: a risk factor for infective endocarditis?

Maria Werner, Judy Gnarpe, Anders Odén, Rune Andersson, Harriet Hogevik

Göteborg University/ Södra Älvsborgs Sjukhus

Background
Patients with valvular disease are prone to acquire infective endocarditis. Chlamydia pneumoniae has been associated with valvular disease, but a role in endocarditis is unclear. We studied if C. pneumoniae infection indicated by the presence of antibodies, is a risk factor in patients with endocarditis and/or is more prevalent in patients with blood culture negative than blood-culture verified endocarditis.

Methods
C.pneumoniae infection, indicated by C.pneumoniae IgG≥512 and IgA≥64, were analyzed in 160 male and 127 female episodes of endocarditis (blood culture negative (n=71), blood culture positive (n=216)) and a randomly selected healthy control group of 70-year olds (178 men and 248 women) from the same region.

Results
29% of women with endocarditis had IgG≥512 as compared to 17% of controls, OR 2.21 [1.32-3.70], 29% of women with endocarditis had IgA≥64 compared to 10% of controls OR 3.98 [2.26-7.01]). 29 % of men with endocarditis had IgG ≥512 as compared to 26% of controls, OR 1.37 [0.83-2.27]; the corresponding numbers for IgA≥64 were 40% vs 31% OR 1.80 [1.12-2.91]. The prevalence of IgG≥512 and IgA≥64 were compared in blood culture negative (men n=38, women n=33) and positive patients (men n=122, women n=94); IgG aOR 1.69 [0.84-3.33] men, OR 1.69 [0.83-3.45 women), IgA OR 1.61 [0.83-3.13] men, OR 1.61 [0.79-3.23] women.

Conclusion
C. pneumoniae IgA ≥64, thought to indicate persistent infection were found more often in endocarditis patients than healthy controls. Markers of persistent C. pneumoniae infection, was not found to be significantly different in blood culture positive and negative patients with endocarditis.

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B-HEMOLYTIC STREPTOCOCCI AS A CAUSE OF INFECTIOUS ENDOCARDITIS. REPORT FROM THE ICE PROSPECTIVE COHORT STUDY

Woods CW, Hoen B, Utili R, Cabell C, Pappas P, Murdoch D, Nacinovich F, Ramos, Vinogradova, Atclas, Kamarulzaman, Olaison L

Background
β-hemolytic streptococci (βHS) historically are an infrequent cause of infective endocarditis (IE). However, invasive βHS are increasing among the elderly and chronically ill. This study was designed to determine the frequency, distribution, clinical characteristics, and outcome of βHS utilizing the International Collaboration on Endocarditis (ICE) Prospective Cohort Study (ICE-PCS).

Methods
From January 1, 2000 and December 31, 2003, 1779 cases of definite IE were prospectively enrolled by 39 centers representing 16 countries using a standard case report form. We compared patient demographics, risk factors, echocardiographic findings, and outcome for patients with definite IE caused by βHS versus all other etiologies.

Results
βHS caused 54 (3%) episodes, of which 43 (80%) involved native valves. Patients were primarily male (63%) with mean age of 54 years and regional distribution similar to other causes of IE. Group B was the most common βHS [39 (72%)], followed by groups G [8 (14%)], A [6 (11%)], and C [1 (2%)]. All isolates were penicillin susceptible (45 tested). All patients were treated with a β-lactam or glycopeptide and 27 (50%) received an aminoglycoside. Though 12 (22%) patients had diabetes, only 2 (4%) were IVDA, and no patients had HIV or were receiving hemodialysis. Recent non-dental procedures were less frequent than the remainder of the cohort (7% vs. 19%, p=0.03). Fifty-two (96%) patients had vegetations (58% mitral, 33% aortic, 13% tricuspid), 17 (31%) had paravalvular complications, and 25 (46%) patients required surgical intervention. Embolic events (stroke 18%, other 28%), heart failure (37%), and death (13%) were common complications, but did not differ from the remainder of the cohort.

Conclusion
βHS, predominantly group B, are an infrequent, yet important cause of IE with appreciable morbidity and mortality.

ISCVID Poster 86

NATIVE AND PROSTHETIC VALVE ENDOCARDITIS CAUSED BY BRUCELLA SPP: EVALUATION OF EIGHT CASES

Funda KOÇAK Serap ŞİMŞEK YAVUZ

Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Hospital, Infectious Diseases and Clinical Microbiology, Uskudar, Istanbul, Turkey.

Background
Eight cases of infective endocarditis caused by Brucella spp. were evaluated.

Methods
All cases of infective endocarditis admitted to Siyami Ersek Thoracic and Cardiovascular Surgery Hospital were recorded prospectively between January 2000 and August 2004. Diagnosis of infective endocartis were made according to Duke criteria .

Results
A total of 88 cases with infective endocarditis were recorded and 8 of these (9%) patiens were identified as having endocarditis caused by Brucella spp.
Underlying heart diseases were prosthetic valves in 5 patients and native valve sequelae secondary to acute reumatic fever in 3. All of the patients had positive results of Wright aglutination with titers greater than 1/1280.
Brucella melitensis was isolated in blood cultures of 6 patients. Vegetation, abcess, chordae rupture and new dehiscence of prosthetic valves have been seen either TEE or TTE in 8,5,1 and 1 of 8 patients respectively. Although TTE were found to be normal, TEE revealed vegetation in 4 (3 prosthetic, one native valve) of 8 patients. All of the patients were treated with trimethoprim-sulfamethoxazole, rifampicin and doxycycline combinatien for 12 months. Surgical intervention was done for 7 patients within a median of 18 days (range 7-45). All of the patients were alive after 12 months of follow up.

Conclusion
Brucella spp. should be considered in patients with infective endocarditis, especially in countries where the disease is endemic. TEE should be done in case of normal TTE findings. Early surgical intervention can reduce mortality.

ISCVID Poster 87

STERNAL SURGICAL SITE INFECTIONS: SURVEILLANCE AND RISK FACTORS

Serap Simsek Yavuz*, Yesim Bicer**, Nihan Yapıcı**, Sibel Kalaca***, Osman Ozcan Aydın**, Gercek Camur****, Funda Kocak*, Zuhal Aykac**

** Siyami Ersek Thoracic and Cardiovascular Surgery Hospital, Infectious Disease and Clinical Microbiology, Uskudar, Istanbul, Turkey*

Background
The objective of this study was to identify the incidence, etiology and risk factors, including operating theater ventilation system, of the sternal surgical site infections (SSI).

Methods
Potential risk factors and infection data were collected prospectively and analyzed by multivariate analysis. All adult patients undergoing cardiac surgery with sternotomy between January 14, 2002, and July 1, 2002,who survived at least 4 days after surgery and who had no infections of otherside were included in the study. Risk factors were analyzed for sternal, superficial sternal and deep-seated (deep and organ space) sternal SSI.

Results
Potential risk factor data were complete for 991patients. There was sternal SSI in 41 (4,1%) patients and 22 (2,2%) and 19 (1,9%) of these infections were superficial and deep-seated sternal SSI respectively. Female gender, operating theater without laminar flow, procedure exceeding 5 hours and mechanical ventilation longer than 24 hours were identified as independent risk factors for sternal SSI. Female gender, operating theater without laminar flow, procedure exceeding 5 hours,and peripheral arterial disease were identified as independent risk factors for superficial sternal SSI. Diabetes mellitus, operating theater without laminar flow and mechanical ventilation longer than 24 hours were identified as independent risk factors for deep-seated sternal SSI.

Conclusion
Risk factors for superficial and deep-seated SSIs are different. Reducing the length of surgery, extubation of patients as early as possible and performing the cardiac surgery operations in operating theater equipped with laminar flow could reduce the rate of postoperative sternal SSI.

ISCVID Poster 88

A REASSESSMENT OF LEFT PROSTHETIC VALVE ENDOCARDITIS (PVE)

San Martin JV, Sarria C,Vilacosta I, San Roman JA, Luaces M, Stoermann W, Cañadas V, Guio L, Duarte J

Fuenlabrada Hospital

Background
OBJECTIVE: To describe characteristics of PVE, depending on time of diagnosis post-surgery.

Methods
Prospective observational and multicenter study. 100 episodes of left definitive PVE were included from 1996 to 2002. PVE was classified as early <2 months (EPVE), intermedium >2 months-<2years (IPVE), and late >2 years (LPVE) post-surgery.

Results
There were 24 EPVE, 39 IPVE, y 37 LPVE. EPVE was associated to staphylococcal infection (OR3.5,IC95%1.1-10.4); IPVE to non virulent skin microorganisms (OR4.7, IC95% 1.9-11.4) and to metallic aortic valve (OR3.6 IC95% 1.2-10.9). S. viridans to biological prosthesis (OR6.5, IC95%1.3-33.3).
Early diagnosis was associated to EPVE (OR3.6, IC95%1.2-11.1) and S. aureus (OR4.2, IC95%1.1-16.5). Delayed diagnosis to IPVE (OR2.7,IC95%1.1-7.2) and to the presence of constitutional syndrome. EPVE presented more frequently with fever plus cardiac symptoms (45.8%,IC95%25.8-65.7) meanwhile IPVE and LPVE did with fever plus constitutional syndrome. Debut with either fever associated to neurological (OR19.9, 2.9-135.5) or to cutaneous findings (OR6.1, IC95%1.4-27.8) was related to S. aureus.
ETE detected 47 perivalvular extension, dehiscence 36. Risk factors for extension were IPVE (OR5.6,IC95%1.9-16.5) , aortic location (OR2.8, IC95%1.3-6.1) .71 had indication for surgical treatment but only 58 got it , 20 urgently. Episodes with perianular extension (OR12.7,IC95%3.6-45.1) or dehiscence (OR6.2,IC95%1.6-23.8) required surgery more often. Mortality was 35%, and this was greater when perianular extension (OR2.7, 1.2-6.5, p=0.029) or septic shock were present (OR 10.4, 2.7-39.6).

Conclusion
Some characteristics of PVE depend of the time of diagnosis post-surgery and others of the microorganism. Perianular extension is a determinant of bad prognosis. Mortality is still high.

ISCVID Poster 89

PREDICTORS OF IN-HOSPITAL MORTALITY IN INFECTIOUS ENDOCARDITIS: RESULTS OF A NATIONAL SURVEY IN ARGENTINA

Nacinovich FM, Casabe JH, Ferreirós ER, Modenesi JC, Cortés C, Swieszkowski S, Angel A, Varini S.

Instituto Cardiovascular de Buenos Aires

Background
To determine in-hospital mortality rate and predictors of mortality of infective endocarditis (IE) in Argentina.

Methods
Prospective, multicenter survey performed in 82 hospitals representing 16 out of 24 provinces. Patients were enrolled according to Duke criteria (definite or possible IE) during an 18-month period (2001-2002).

Results
Four hundred and seventy episodes in 452 patients were included (mean age was 58,1±17,6 years, male sex 69,7%, definitive IE in 83% and possible in 17%). Underlying heart disease 66.4% and prosthetic-valve IE 19,2%. Causative microorganisms: Staphylococcus 38% (S. aureus 30%, S. coagulase-negative 8%), Streptococcus 39,4% (S. viridans 26,8%, S. Bovis 5,5%, others 3.1%), Enterococcus 10,8%, HACEK group 6,6%; negative blood cultures 17,7%. Surgical treatment was indicated in 33,3% and in-hospital mortality was 24,3%. In a logistic regression analysis the following variables remain as independent predictors of increased mortality: age > 60 years (OR 2,1; 95% CI 1,1 – 3,96; p = 0,024); heart failure (OR 5,9; 95% CI 3,1-10,9; p <0,001), septic shock (OR 25,1; 95% CI 9,9-62,5; p <0,001), hepatic failure (OR 12,2, 95% CI 1,9-76,9; p = 0,008); persistent hyperthermia (OR 2,3, 95% CI 1,2-4; p= 0,014); showing a strong predictive trend but without statistical significance: abnormal metal status and stroke.

Conclusion
Hospital mortality of IE in Argentina is high. Simple and readily available variables are strong predictors of higher in-hospital mortality. Their use can help to identify high-risk patients and could be useful to guide decision-making in order to improve the outcomes of patients with IE.

ISCVID Poster 90

EPIDEMIOLOGICAL, CLINICAL AND MICROBIOLOGICAL PROFILE OF INFECTIVE ENDOCARDITIS IN ARGENTINA: RESULTS OF A NATIONAL SURVEY

Nacinovich F, Ferreirós ER, Casabé JH, Modenesi JC, Swieszkowski S, Kazelian L, Varini S, Ciruzzi M.

Instituto Cardiovascular de Benos Aires

Background
To determine characteristics and in-hospital outcome of IE and to compare the results with a 1992 IE national survey.

Methods
Prospective, multicenter study conducted in 82 hospitals representing 16 out of 24 provinces of Argentina, during an 18-month period (2001-2002). Patients were included according to Duke criteria.

Results
From 470 surveyed episodes of IE, 390 cases were definite. Mean age of the definite IE cases: 58.5 ± 17.3 years, male sex 70.0%, M:F ratio 2.3:1. Pathological evidence of IE was available in 26.2%. No previously known heart disease: 35.1%; prosthetic-valve IE (PVE): 15.9%. Microorganisms: streptococci 38.3% (S. viridans 27.0%, S. bovis 5.2%, others 6.1%), enterococci 10.2%, staphylococci 36.7% (S. aureus 29.8%, S. coagulase negative 6.9%), HACEK group 6.1%, fungal 1.4%, polymicrobial 2.0%; negative blood cultures 10.8%. Surgical treatment: 26.2%; in-hospital mortality: 24.6%. Patients from the 2002 survey were older (58.5 □ 17.3 vs. 51.3 □ 18.7; $p < 0.01$). More frequently had underlying heart disease (64.9% vs. 55.0%; $p < 0.01$): degenerative valve disease (11.5% vs. 4.8%; $p < 0.01$), congenital heart disease (9.5% vs. 4.2%; $p < 0.01$), and PVE (15.9% vs. 8.5%; $p < 0.01$). The prevalence of rheumatic valve disease was significantly less than in the 1992 survey (5.4% vs. 13.0%; $p < 0.01$). The incidence of staphylococcal IE has increased (30% vs 26%).

Conclusion
The IE profile has changed in Argentina in the last decade. In-hospital mortality remains high, suggesting that more aggressive measures are needed for the early identification, prevention and treatment of IE.

ISCVID Poster 91

SURGICAL TREATMENT OF MITRAL VALVE ENDOCARDITIS IN NORTH AMERICA

James S. Gammie, Sean M. O'Brien, Barley P. Griffith, Eric D. Peterson

University of Maryland Medical Center

Background
Several small single-institution series have suggested the feasibility and effectiveness of mitral valve repair for infective endocarditis (IE).

Methods
We examined 6627 patients with IE undergoing mitral valve surgery at 661 STS-participating centers in 1994 – 2003.

Results
The diagnosis of IE was assigned to 5.8 % (6627/114934) of patients having mitral valve surgery. The overall frequency of mitral valve repair for IE was 29.7 % (1965/6627). Mitral valve repair was less frequently used for patients with active IE (423/2654, 15.9 %) than those with treated IE (1459 / 3570, 40.9 %). Operative mortality was 3.7 % (72 / 1965) for mitral valve repair and 10.8 % (502 / 4662) for mitral valve replacement. Mortality rates were lower for patients with treated IE compared to active IE. After adjusting for multiple preoperative risk factors, mitral valve repair (odds ratio 0.67, 95 % CI 0.51 – 0.88) was associated with a significantly lower risk of death. Active (vs. treated) IE (odds ratio = 2.12, 95 % CI: 1.68 to 2.68) and recent cerebrovascular accident (odds ratio = 1.71, 95 % CI: 1.28 to 2.31) were independent predictors of mortality.

Conclusion
Mitral valve repair is less commonly applied for IE compared to other indications for mitral valve surgery. Patients with active IE were less likely to receive repair than those with treated IE. Mitral valve repair was associated with a lower risk of mortality. These results provide support for performing mitral valve repair when technically feasible in the setting of infective endocarditis.

ISCVID Poster 92

IS TOOTHBRUSHING GOOD, BAD OR INDIFFERENT FOR YOUR HEART?

Lucas VS, Gafan G, Dewhurst S, Roberts GJ

University / Hospital Affiliation: Eastman Dental Institute, University College London, UK

Background
Although the prevalence of bacteraemia following extractions is well documented, there is little data for everyday homecare procedures such as tooth cleaning. Could it be that 'Dentists are Innocent!'(Roberts et al. 1990) of causing IE? The prevalence and intensity of bacteraemia (cfu/ml) were investigated after cleaning with toothbrushes commonly used for homecare.

Methods
Children undergoing general anaesthesia for treatment at the Eastman Dental Hospital were recruited. A Y cannula was inserted into an antecubital fossa vein using aseptic technique. 0.5 mL of blood was discarded to void any skin contaminants. 6 mL of blood were withdrawn (Baseline) and a second 6 mL blood sample was taken 30 seconds after toothcleaning with one of the following: (1) Manual toothbrush (2) Braun plaque remover (3) Sonicare electric toothbrush (4) Dental handpiece and rubber cup. All blood samples were processed using Lysis Filtration and bacteria identified using standard culture techniques.

Results
141 children were recruited.

Prevalence and Intensity of Bacteraemia after Toothbrushing

Group	Subjects	Baseline		30 s Later	
		+ve	Cfu / ml	+ve	Cfu / ml
Manual toothbrush	31	7	0.07	6	0.86
Braun plaque remover	36	9	0.07	12	0.38
Sonicare electric toothbrush	33	9	0.06	11	1.26*
Dental handpiece + rubber cup	41	6**	0.06	15**	1.15

* p = 0.05, **p = 0.01

Conclusion
The mean prevalence of bacteraemia following the dental handpiece and and the mean intensity following the Sonicare electric toothbrush were significantly greater than baseline.

Note: The following ISCVID abstracts: 4,7,8,11,12,13,14,15,20,21,24,38,54,76,77,83, and 85 were all done in collaboration with the ICE Group of Investigators:

ICE Investigators:

D Gordon, A Lee (*Adelaide Australia*); J van der Meer, D Verhagen (*Amsterdam Netherlands*); W Armstrong, S Bradley, C Kauffman (*Ann Arbor USA*); S Lerakis (*Atlanta USA*); D Holland, S Lang, A Morris, K Read (*Auckland New Zealand*); M Almela , M Azqueta, N de Benito, E de Lazzari, C García de la Maria, A del Río, J M. Gatell, MJ Jiménez-Expósito, F Marco, C A. Mestres ,JM Miró, A Moreno, C Paré, N Pérez (*Barcelona Spain- Hosp. Clinic*); B Almirante, V Falcó, P Tornos (*Barcelona Spain- Hosp. Vall d'Hebrón*); Z Kanafani, S Kanj-Sharara, R Traboulsi (*Beirut Lebanon*);M Rizzi, F Suter, G Valsecchi (*Bergamo Italy*); Y Bernard, C Chirouze, E Giannitsioti, B Hoen, J Leroy, P Plesiat (*Besançon France*); W Dismukes, M Patel (*Birmingham USA*); T Elliott, N O'Connell, R Watkin (*Birmingham United Kingdom*); J Altclas, S Kogan (*Buenos Aires Argentina- Sanatorio Mitre*); J Casabé, C Cortes (*Buenos Aires Argentina- Instituto de Cardiología y Cirugía Cardiovascular*); L Clara, M Sanchez (*Buenos Aires Argentina- Hospital Italiano*); J De Ierolamo, M Marin, F Nacinovich (*Buenos Aires Argentina- Instituto Cardiovascular*); J Francis, K Venugopal (*Calicut India*); A Commerford, P Commerford, C Hansa, M Ntsekhe (*Cape Town South Africa*); R Cantey, D Wray (*Charleston USA*); D Murdoch, S Chambers (*Christchurch New Zealand*); T Korman (*Clayton Australia*); R Bedimo, M Shah (*Dallas USA- Dallas VA Medical Center*); G Peterson, P Southern, Jr. (*Dallas USA- UT-Southwestern Medical Center*); D Levine, C Tittle (*Detroit USA*); A Hanlon-Feeney, M Hannan, S Kelly (*Dublin Ireland*); O Aksoy, K Baloch, D Benjamin, P Brown, C Cabell, V Chu, R Corey, L Drew, J Engemann, V Fowler, T Harding, J McDonald, P Pappas, D Sexton, M Stryjewski, A Wang, C Woods (*Durham USA*); C Naber, C Neuerburg (*Essen Germany*); E Athan, S Graves (*Geelong Australia*); S Lang (*Glasgow United Kingdom*); L Olaison, U Snygg-Martin (*Göteborg Sweden*); J Chaiworramukkun, O Pachirat, T Suwanich (*Khonkaen Thailand*); A Kamarulzaman, S Syed Tamiz (*Kuala Lumpur Malaysia*); T Lejko-Zupanc, M Logar (*Ljubljana Slovenia*); J Klein, C Orezzi (*London United Kingdom*); E Bouza, M Fernández, M Marín, M Moreno, P Muñoz, V Ramallo, M Rodríguez-Créixems (*Madrid Spain*); J-P Casalta, G Habib, D Raoult, F Thuny (*Marseille France*); D Spelman (*Melbourne Australia*); O.M. Butkevich, N Chipigina, O Kirill, K Vadim, T Vinogradova (*Moscow Russia*); F Alla, T Doco-Lecompte, C Selton-Suty (*Nancy France*); D Iarussi, MF Tripodi, R Utili (*Napoli Italy*); A S Kumar, G Sharma (*New Deli India*); S Dickerman (*New York USA*); D Eisen (*Parkville Australia*); X Duval, C Leport (*Paris France*); E Abrutyn (*Philadelphia USA*); C Michelet, P Tattevin (*Rennes France*); C Fortes (*Rio De Janeiro Brazil*); I Anguera, B Font, J Guma (*Sabadell Spain*); S Braun Jones (Santiago *Chile- Hosp. Clínico Pont. Universidad Católica de Chile*); R Montagna Mella, M Oyonarte (*Santiago Chile- Universidad de Chile*); A de Oliveira Ramos (*São Paulo Brazil*); A de Alarcón, R Parra (*Sevilla Spain*); L-N Lum, R-S Tan (*Singapore Singapore*); P Jones, S Ryan, M Feneley (*Sydney Australia*); S Dragulescu, A Ionac (*Timisoara Romania*); E Cecchi, M Imazio, R Trinchero (*Torino Italy);* N Raymond (*Wellington New Zealand*); E Rubinstein (*Winnipeg Canada*); B Barsic, I Klinar, V Krajinovic (*Zagreb Croatia*);

Speakers and Moderators Index...

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Map of Mills House Hotel: Meeting Rooms